



B-25 MITCHELL **VS** JAPANESE DESTROYER

Battle of the Bismarck Sea 1943

MARK LARDAS

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Dedication

To my friends of the Greater Bay Area Scale Model Association in Clear Lake, Texas.

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INTRODUCTION

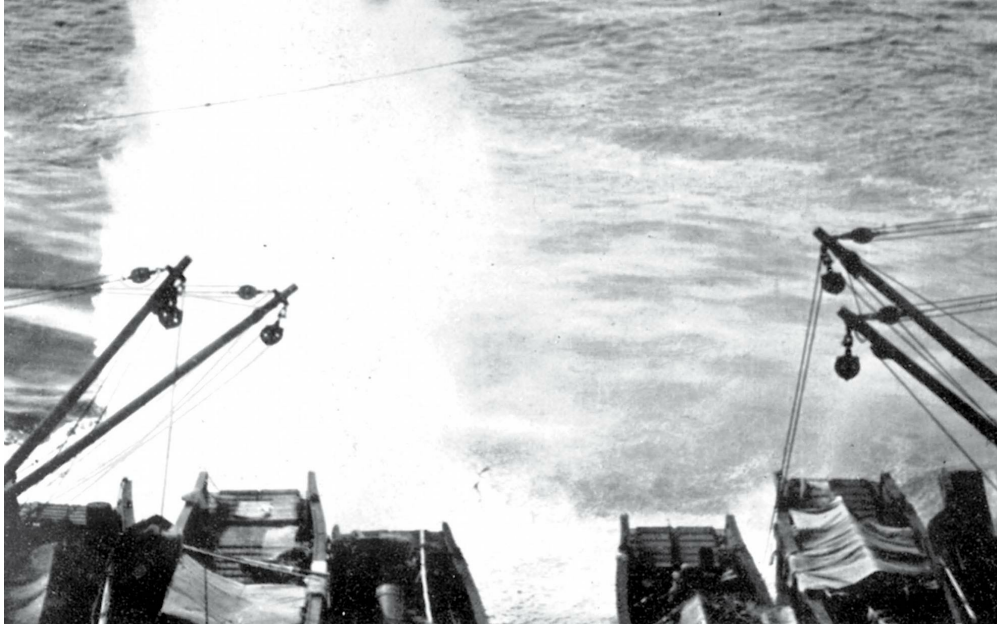
The emergence of military aircraft in World War I added a new dimension to warfare. By the end of that conflict, the aircraft's role in aerial reconnaissance and tactical battlefield support was widely accepted. Air power advocates saw aircraft as a means of delivering troops behind enemy lines, and interdicting the flow of supplies to the battlefield by aerial bombing of supply centers and transportation lines. Enemy fleets and invasion forces could be kept from homeland shores through air power.

Extreme air power advocates, including Brig Gen William "Billy" Mitchell of the US Army Air Service (USAAS) and Gen Giulio Douhet of the Regia Aeronautica, even argued that aircraft made armies and navies obsolete. Strategic bombardment could win wars remotely, without the need to place troops on enemy soil. They could bypass both land-based fortifications and ocean-going navies.



Although the B-25 gained fame through its participation in the Doolittle Raid against Japan on April 18, 1942, the Mitchell's overall performance during the course of that first year of the Pacific War was disappointing, especially against shipping. These B-25Cs, photographed nearing completion at NAA's Inglewood, California, plant, in October 1942, were representative of the first Mitchells supplied to the Fifth Air Force at around this time. (Library of Congress, Washington, D.C.)

Aircraft technology made this view only a vision into the early 1930s, as the vast majority of designs were both too small and too fragile. They lacked the range and bombload to project the force required by the air power enthusiasts of the interwar period. USAAS bombers sank the captured German battleship *Ostfriedland* in 1921, but under extremely favorable circumstances. The vessel was anchored and the bombers attacked unopposed by anti-aircraft fire. Under combat conditions *Ostfriedland* would probably have survived.



Field modifications and new low-level tactics first deployed during the Battle of the Bismarck Sea transformed the Mitchell into a ship killer. Here, a B-25 plants a bomb next to a Japanese ship during that action. (Author's Collection)

Yet by the mid-1930s aircraft had improved significantly. All-metal monoplanes could carry bombs and torpedoes capable of sinking even the largest warships. They would demonstrate that capability with appalling regularity during the early years of World War II, with attacks on the Italian fleet in Taranto harbor in November 1940, the US Pacific Fleet at Pearl Harbor in December 1941 and, finally, decisively sinking the battleship HMS *Prince of Wales* and the battlecruiser HMS *Repulse* off the Malay Peninsula later that same month. *Prince of Wales* and *Repulse* were at sea, maneuvering under combat conditions, yet they still were sunk.

Yet the ability of aircraft when targeting ships still seemed constrained. Through to the end of 1942, most surface vessels that were hit, much less sunk, by aircraft succumbed either to torpedoes or ordnance dropped by a dive-bomber. Such weaponry generally limited an aircraft to one bite at its target. Torpedo-bombers carried no more than two torpedoes, with most armed with just one. Similarly, dive-bombers could generally only carry one bomb of ship-killing size on a mission, generally slung under the centerline of the fuselage.

While several nations used multi-engined aircraft as torpedo-bombers, most were single-engined, as were dive-bombers. This made them more

limited in range and size than multi-engined bombers. Moreover, torpedoes were expensive and complex, requiring finicky maintenance that was difficult to achieve at primitive advanced bases. Bombs were cheaper, simpler and more reliable.

Yet using conventional bombs proved maddeningly ineffective, except with dive-bombing. Conventional medium- and high-level bombing was ineffective against a maneuvering ship. Even when multiple bombs were dropped, they ended up scattering into the ocean around the evading ship. They were more effective against anchored vessels, but even then only a small fraction actually hit their intended target. What made it more frustrating was the fact that a single 500lb bomb hitting a merchant vessel or small warship could potentially sink it. Under most circumstances one hit would cripple it, allowing the ship to be finished off by subsequent attacks.

Low-level attacks offered the pilot an increased chance of actually hitting a maneuvering ship. A primitive iron bombsight sufficed, and the pilot could toggle the bomb, eliminating the need for a bombardier. But low-level attacks posed two difficulties. Firstly, hitting a ship by dropping a bomb broadside to the vessel took great skill. Secondly, low-level bombing was considerably riskier than attacking at medium altitude.

Flying straight and level at a ship at low altitude made the aircraft an excellent target for the vessel's light antiaircraft weapons, whose gunners did not have to worry about deflection angles. All they had to do was point and shoot. Unless bombers suppressed the antiaircraft fire, high casualties resulted. The single 0.50-cal. mounted in the nose of most Allied medium bombers in late 1942 was simply too weak to provide sufficient suppressive fire.

Yet even under optimal antiaircraft conditions for gunners, most Imperial Japanese Navy (IJN) ships did little damage to attacking aircraft because of the paucity of their weaponry. Even destroyers and light cruisers carried too few guns to put up enough fire to reliably hit incoming aircraft. Allied multi-engined medium bombers were sufficiently robust and armored to require multiple hits to bring them down.

The situation was frustrating for both sides. An Allied medium bomber attacking an IJN destroyer pitted two potentially fragile and easily damaged combatants against each other. But neither seemed capable of hitting the other. The destroyer's antiaircraft battery was too light to seriously damage a

medium bomber, except under unusual circumstances, yet the medium bomber could not seem to land a hit with its typically carried 500lb bombs using conventional tactics. It was a battle of eggshells armed with feathers.

The Allies, who were well aware of these shortcomings, experimented with improving the aircraft they fielded and the bombing tactics employed. The USAAF's Fifth Air Force, running the Allied air forces in the New Guinea theater, developed a new type of low-level attack called skip bombing. Aircraft attacked at low altitudes, no higher than 500ft above sea level, approaching the target ship from behind and dropping a bomb parallel to it. If the weapon hit, the time-delayed fuse exploded in the bowels of the ship, destroying propulsion machinery or ammunition magazines. If it missed, the bomb exploded underwater near the hull, rupturing hull plates and filling the ship with water.

The bombers were also modified by filling the bombardier's position with additional 0.50-cal. machine guns, thus providing a way for a low-flying aircraft to suppress the anti-aircraft battery of the ships it was attacking.

Crews began practicing skip bombing in January and February 1943. By March, the Allies were ready to test the new method of attack in battle. Other medium bombers (specifically the A-20 Havoc and B-26 Marauder) aside from the B-25 Mitchell also trialled skip bombing, with the first such attacks being intended for both Japanese transport vessels as well as lightly armed destroyers. The true effectiveness of the skip bombing tactics and the new strafing bombers employing them would be revealed when B-25s targeted the IJN's more modern, and better armed, large destroyers. The results of that duel set the pattern for attacks against Japanese shipping for the rest of the war.

CHRONOLOGY

1922

February 6

The Washington Naval Treaty, limiting battleship and cruiser construction, leads Japan to develop large destroyers.

1927

November 15

Fubuki launched, the first IJN Special Type destroyer.

1930

April 23

The London Naval Treaty, limiting construction of warships, including destroyers, is signed.

1936

December 16

Japan resumes building Special Type destroyers, launching *Arashio*.

December 31

Japan withdraws from all international naval limitation treaties.

1937

July 7

Second Sino-Japanese War begins.

1939

March 11

The US Army Air Corps (USAAC) issues request for proposal AC-39-640 for a new medium bomber with a crew of five and a maximum speed in excess of 300mph.

April 20

North American Aviation (NAA) submits NA-62 as its design for the AC-39-640 competition.

August 10

Martin wins AC-39-640 with its Model 179 design. The USAAC designates it the B-26, issuing a contract for 201 aircraft.

September 20

The USAAC awards NAA a contract for 184 NA-62 medium bombers due to Martin's inability to deliver all of the B-26s on order. The USAAC designates the aircraft the B-25.

1940

August 19

The B-25 completes its maiden flight.

1941

February 25

First flight of a B-25 with the broken-dihedral gull wing. It is designated the B-25A.

August

The first of 119 B-25Bs is delivered to the USAAC. The last is delivered in late January 1942.

November 9 First flight of the B-25C, the first mass-produced Mitchell.

December 7 The IJN attacks Pearl Harbor, beginning the Pacific War phase of World War II.

1942

January First of 1,625 B-25Cs delivered.
Production ends in May 1943.

January 22 Japanese forces invade and capture Rabaul, occupying New Britain and New Ireland.

February First of 2,290 B-25Ds delivered.
Production ends in March 1944.

March 8 Japanese forces occupy Lae and Salamaua, invading New Guinea.

May 4–8 Battle of the Coral Sea.

July 21–22 Japanese forces capture Buna.

September Maj Paul Gunn, engineering officer for the 3rd Bombardment Group (BG), oversees the modification of an A-20 to carry four 0.50-cal. machine guns in the nose in place of the bombardier.

October Maj William Benn begins testing skip bombing using B-17s.

December 8 Maj Gunn delivers the first strafing B-25, christened *Margaret*, to the 3rd

BG's 90th Bombardment Squadron (BS).

1943

January

First flight of the B-25G, a dedicated Mitchell gun variant fitted with a 75mm cannon and forward-firing 0.50-cal. machine guns.

January 2

Allies recapture Buna.

February

Maj Gunn completes conversion of 12 strafer B-25s for the 90th BS.

March 2–5

The Battle of the Bismarck Sea is fought.

March 3

First flight of the B-25J, a version replacing the solid nose of the B-25G with a bombardier's position.

May

First B-25G delivered – 400 are produced between May and August 1943.

May 15

First flight of the B-25H, a modified solid nose gun version with the dorsal turret moved forward of the bomb-bay, a tail turret and casemate-mounted waist guns added.

July 20

B-25s attack and sink the destroyers *Kitonami* and *Yugure* off Kolombangara.

July 28

	B-25s attack and sink the destroyer <i>Mikazuki</i> .
August	First of 1,000 B-25Hs delivered. Production ends in July 1944.
December	First of 4,318 B-25J delivered.
1944	
February 19	B-25s and A-20s sink three submarine chasers near Kavieng.
June 8	B-25s sink the destroyer <i>Harusame</i> off New Guinea coast.
1945	
March 13	B-25s sink the frigate Coastal Defense Vessel No. 66 off Shantu, China.
March 29	B-25s sink frigate Coastal Defense Vessel No. 130 off Quảng Ngãi, French Indochina.
April 6	B-25s sink the destroyer <i>Amatsukaze</i> and Coastal Defense Vessels Nos. 1 and 134 east of Amoy, China.
October 15	NAA completes construction of the last Mitchell, B-25J 44-8899.
1948	
May 1	Kagero-class destroyer <i>Yukikaze</i> commissioned into the Republic of China Navy as <i>Tan Yang</i> .

1971

December

Tan Yang scrapped.



This early-build B-25C lacks nose armament, which was usually added by the USAAF once the aircraft had been accepted and flown to a nearby modification center for post-production changes in order to modify or install equipment needed for specific roles or theaters of operation. The aircraft was photographed on a NAA-generated check flight from Inglewood in October 1942. (Library of Congress, Washington, D.C.)

DESIGN AND DEVELOPMENT

B-25 MITCHELL

The B-25 Mitchell's origins lay in AC-39-640, a proposal for a new USAAC medium bomber, issued on March 11, 1939. It was a replacement for the Douglas DC-2-inspired B-18 Bolo, which had been put into production just two years earlier. Bidding companies could submit any number of design options, and the winner would get an order for 385 bombers.

AC-39-640 called for an aircraft that could carry a bomb load of 3,000lb at least 2,000 miles at a top speed of at least 300mph – the obsolete B-18, by comparison, carried 2,000lb of ordnance 900 miles at 216mph. The request indicated a desired top speed of 350mph. The aircraft was to operate at altitudes between 8,000 and 14,000ft, with a service ceiling of 20,000ft. It was primarily to be a horizontal bomber, although the aircraft could also serve in a tactical role as a “strike bomber.”

The specification dictated the engines to be used. The USAAC wanted a twin-engined bomber equipped with either Pratt & Whitney R-2800 or Wright R-2600 or R-3350 radials. The first two engines generated 1,600hp, while initial R-3350 designs produced 2,200hp.

Although seven companies submitted designs, only four remained in the competition by September 10, 1940 – Martin, with its Model 179, Douglas with the B-23, Boeing-Stearman with the XA-21, and NAA with the model NA-62. The Boeing-Stearman design was a resubmittal of the aircraft that had lost an earlier attack aircraft competition to the Douglas DB-7 (which became the A-20 in USAAC service), while the B-23 Dragon was a warm-over improvement of the obsolete B-18. Unsurprisingly, the Boeing-Stearman and Douglas designs were eliminated next.



Built in response to the USAAC's CP-38-385 Light Attack Bomber requirement, NAA's NA-40 and the rival design from Douglas in the form of the Model 7B (DB-7 A-20) did not secure orders despite both aircraft being well received. Like the Douglas "bombing twin," the NA-40's fuselage was narrow, placing the co-pilot in tandem with the pilot. This aircraft effectively served as the precursor to the NA-62, which became the B-25. (Philip Jarrett Collection)

Martin submitted a sleek high-wing design with a cigar-shaped fuselage, a flexible nose gun and dorsal and tail turrets. It could carry up to 5,600lb of bombs. AC-39-640's "high-tech" entry, the Model 179 was capable of attaining 387mph. Martin achieved this by using a short-span wing, but this in turn resulted in high wing loading and a landing speed of no less than 130mph – 37mph more than the NA-62's.

NAA's aircraft was more conventional, the NA-62 being the third twin-engined bomber design submitted by the company. A development of its NA-40 design submitted for a 1938 attack bomber competition, the NA-62 was upsized and improved. It had a mid-mounted wing design, with a rectangular fuselage cross-section. The initial design had a straight wing, with three degrees of dihedral, and trapezoidal twin rudders. Capable of carrying 3,600lb of bombs, the aircraft was equipped with four machine guns for defense – single 0.30-cal. flexible machine guns in the nose and dorsal positions, a single 0.30-cal. switched between port or starboard waist positions, and a 0.50-cal. in the tail. The bomber had a top speed of 322mph.

Martin's design won, for the NA-62 was clearly inferior in terms of speed, bombload, and defensive armament. The Model 179 duly became the B-26. Martin, also building the Model 167 (Maryland) and Model 187 (Baltimore) for the French and British, told the USAAC that it could only deliver 201 B-26s within the time specified. Martin was subsequently awarded a contract

for precisely 201 aircraft. On September 20, 1939, less than three weeks after the commencement of World War II, US Secretary of War Harry Woodring awarded a contract for the additional 184 aircraft to second-place finisher NAA. The NA-62 became the B-25, with the USAAC naming the aircraft the Mitchell for air power pioneer Maj Gen William “Billy” Mitchell, who had died in February 1936.

Both aircraft were ordered off the drawing board, without flying prototypes. The first B-25 was not ready for flight testing until August 19, 1940 (the first B-26 flew three months later), and once aloft, the aircraft revealed several deficiencies. The most serious concerned stability problems with the wings and tail. These were corrected by “breaking” the dihedral at the engine mounting. Retaining the original three degrees of dihedral from the body to the engines, the wing then had slight anhedral to the wing tip, yielding a gull wing configuration. Additionally, the rudders were squared off.



A head-on view of the first B-25, showing its straight wing with constant dihedral. With this wing configuration the aircraft displayed sub-optimal stall characteristics due to airflow issues. NAA placed the wings in a jig to “break” the dihedral outboard of the engine mounting, thereby creating the bomber’s characteristic gull wing. (Philip Jarrett Collection)

The USAAC accepted delivery of 24 B-25s and 40 very similar B-25As in 1940–41. The main difference between the two was the addition of armor to protect the crew and self-sealing fuel tanks to reduce fire risk.

The first major redesign of the Mitchell occurred with the B-model, which had significantly increased defensive armament in the form of a power-

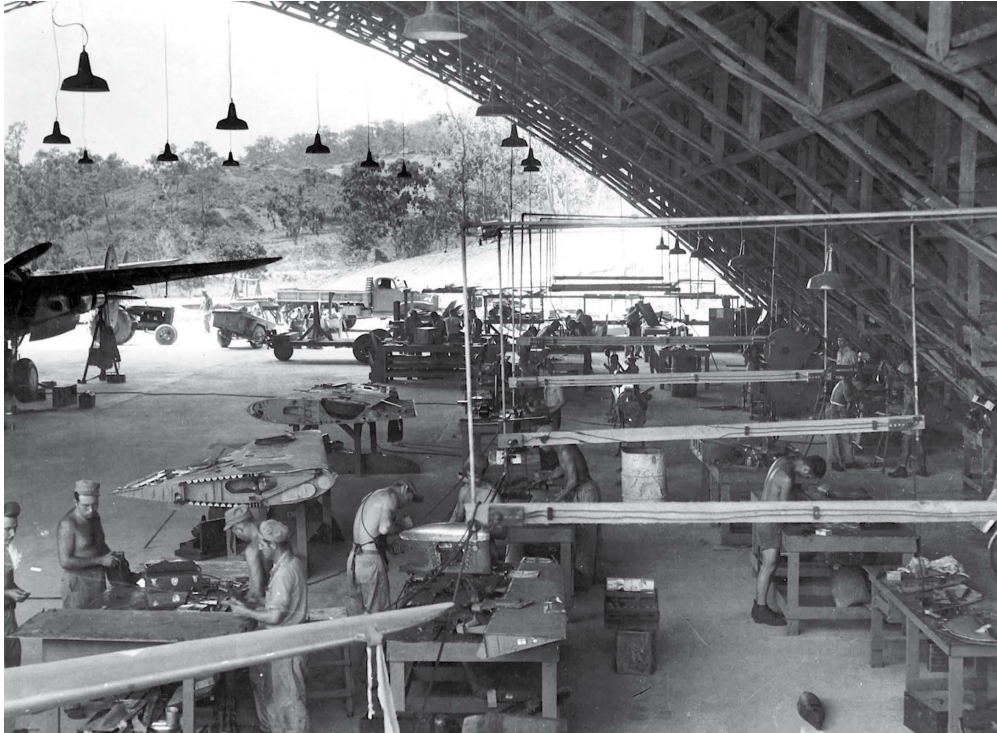
operated dorsal turret identical to the one fitted in the B-26 and a remote-controlled, retractable Bendix ventral turret. Both housed twin 0.50-cal. machine guns. The tail gun was eliminated, while a 0.50-cal. machine gun replaced the nose-mounted 0.30-cal. weapon. The added weight associated with these changes lowered the aircraft's top speed to 300mph. A modified version of the B-25B was used on the Doolittle Raid on April 18, 1942. A total of 120 B-models were delivered between August 1942 and January 1943.



B-25Ds near completion within NAA's Kansas City plant during the fall of 1942. (Philip Jarrett Collection)

The Mitchell entered mass production in January 1942 with the introduction of the B-25C. Primarily a B-model with improved engines, 1,625 examples would be built between January 1942 and May 1943. It was followed by the essentially identical B-25D, which had a production run of 2,290 aircraft. These were delivered concurrently with the B-25C, starting in February 1942 and continuing until March 1944. The model number primarily differentiated B-25s built by NAA (B-25C) and those constructed by other contractors (B-25D).

Many of these aircraft saw action with foreign air forces. The Netherlands received 162, Great Britain nearly 500, China 150, and the USSR 300. Additionally, 202 B-25C/Ds were transferred to the US Marine Corps, where they saw service as the PBJ (patrol bomber, North American).



Fifth Air Force workshops, including this sheet metal shop operated by the 27th Air Depot on the south side of 7-Mile Drome in the Port Moresby airfield complex, began converting existing B-25Cs into strafers in December 1942. By the beginning of March 1943, 12 had been converted – enough to deliver Japan a staggering defeat in the Battle of the Bismarck Sea. (Michael J. Claringbould Collection)

The differences between the C- and D-models became moot in the field, where modifications abounded, especially in the Pacific theater. The ventral turret went first, as it was deemed surplus to requirements in the Southwest Pacific Area, where Fifth Air Force B-25s and A-20s were predominantly used for low-level strike missions. By then, the remote-control system used to aim the unmanned turret had proved useless at anything except inducing vertigo and nausea in the gunner. The weight saved removing it allowed the carriage of extra fuel or weapons. Wing bomb racks and refueling points were often added so more bombs could be carried or longer missions flown.

Strike missions revealed another weakness of the A-20 and B-25. The single nose gun provided insufficient firepower to suppress enemy antiaircraft fire during low-level attacks. Lt Gen George C. Kenney, commanding the Fifth Air Force, assigned the task of improving his A-20 attack bombers to Maj Paul Gunn, engineering officer for the 3rd BG. Gunn realized low-level missions did not need a bombardier, so this station in the nose of the Havoc was replaced by four fixed 0.50-cal. machine guns.

Although the modification worked, the A-20's small size meant sacrificing bomb load in order for the aircraft to cope with the weight associated with the extra guns. Furthermore, the Fifth Air Force had few A-20s. Gunn quickly turned his attention to the B-25. Again, the bombardier's station was pulled and four 0.50-cal. machine guns substituted. Gunn was also able to mount a pair of these weapons in blisters on either side of the fuselage below the cockpit. This gave a total of eight forward-firing guns. Each 0.50-cal. was fed by 400-round magazine boxes. A ring sight was added behind the windshield on the pilot's side and a button to fire the guns and a second button as a bomb release were added to the pilot's control yoke.

The modifications were first made to B-25C 41-12437 *PAPPY'S "FOLLY,"* and flight testing of the aircraft revealed it to be nose heavy. Moving the blister guns three feet further aft solved the problem. Other modifications, such as downward-firing 0.30-cal. machine guns in the bomb-bay, identical weapons in the landing light bays and nose-mounted 20mm cannon were tested and rejected.

B-25D MITCHELL



The B-25D was the first mass-produced production version of the Mitchell built in Kansas City. It was essentially identical to the C-model constructed in the original NAA plant in Inglewood. The Fifth Air Force began receiving B-25s in the spring of 1942, and in December it started converting them into "strafer," replacing the bombardier's position with four 0.50-cal. machine guns and adding four more such weapons in blisters below and slightly behind the cockpit. The aircraft depicted here is one of those early strafers, B-25D 41-29727 *RUNT'S ROOST* of the 90th BS/3rd BG. It was flown by 1Lt Joseph "Runt" Helbert and crew during the Battle of the Bismarck Sea.



PAPPY'S "FOLLY" was sent to the Port Moresby airfield complex in New Guinea on December 29, 1942. Here, the 3rd BG's pilots used it for combat trials and familiarization. While they made test strafing runs on a pre-war shipwreck on a coral reef near Port Moresby, Mitchells from the 3rd BG's 90th BS were being modified into strafers. Twelve such B-25s were available to the squadron by March 1, 1943. The conversions were crude, with the 0.50-cal. machine guns having been salvaged from wrecked fighters. Most of these early conversions, including *PAPPY'S "FOLLY,"* saw groundcrews simply punch holes through the bombardier's canopy for the weapons' muzzles. Usually, but not always, the Plexiglas was painted over.



The Fifth Air Force added eight forward-firing machine guns to its B-25s from late 1942, with four of the 0.50-cal. weapons replacing the bombardier. This field modification was one of the bomber's most important changes. The fearsome artwork on the nose of this B-25C straffer denotes the aircraft's assignment to the 38th BG's 71st BS "Wolfhounds." The unit participated in the Battle of the Bismarck sea from Durand Field. (USAF)

The Battle of the Bismarck Sea in early March 1943 provided the B-25 strafers with their first combat test. Only aircraft from the 90th BS had been converted by then, with the remaining Mitchells committed to the action being standard "glass-nose" B-25s whose crews could use skip bombing tactics but not augment their attacks with strafing. The strafers were so

successful that by September 1943 the Fifth Air Force had “upgunned” 150 B-25s.

NAA noticed this success and incorporated it into production versions of the aircraft. After experimentation with “gun” B-25s, the company began production of the G-model, designed as a strafers, with an aerodynamic fairing in the nose. This version came with two fixed 0.50-cal. nose-mounted machine guns and a similarly located 75mm cannon on the left side of the fuselage. Early-build G-models versions only carried two blister guns on the right side of the fuselage beneath the cockpit, with later examples adding two more 0.50-cal. weapons in the nose and a pair of blister guns on the left side. The B-25G also retained the dorsal and ventral turrets of the B-25C/D. As with earlier bombers, the retractable ventral turret was usually removed. This variant (400 of which were built) was even slower, with a top speed of 281mph.

The B-25H (1,000 built) followed, this aircraft essentially being a G-model with increased defensive armament. Its dorsal turret was also moved forward, a two-gun tail turret was installed and single 0.50-cal. weapons affixed to port and starboard waist mountings. The B-25H was succeeded by the J-model Mitchell, 4,318 of which were built. It returned the aircraft to the medium bomber role, merging the glass-nosed bombardier station of the B-25C/D with the after section of the H-model. With the bombardier’s station reinstalled, the aircraft had a flexibly mounted gun in the nose, two more in blisters on either side of the forward fuselage, twin-gun dorsal and tail turrets, and port and starboard waist guns – all 11 weapons were 0.50-cal. machine guns. NAA provided kits to convert B-25Js from medium bombers into strafers, and vice versa.

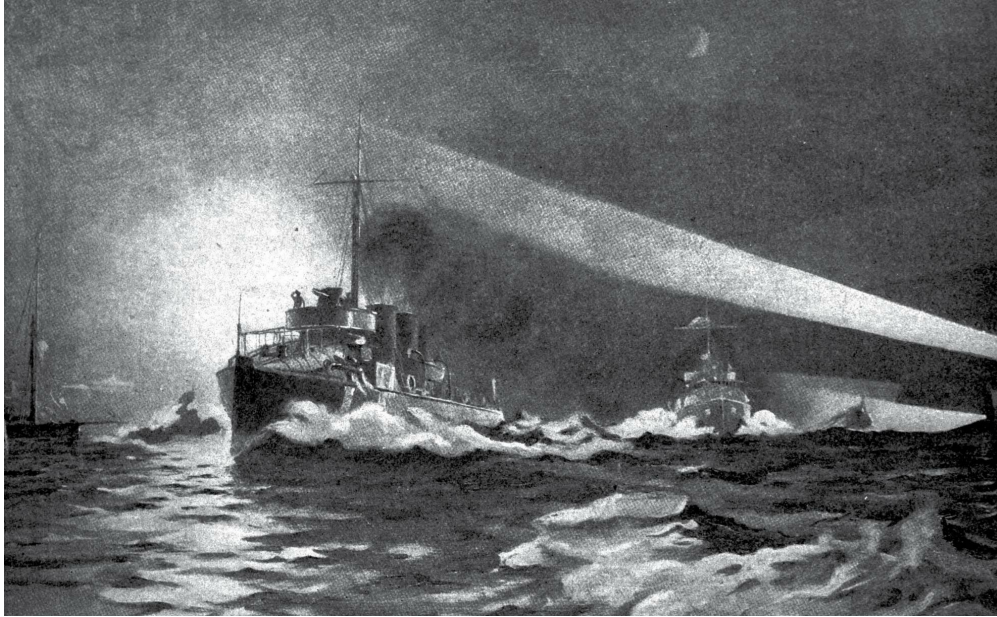
The Mitchell was not the only US medium bomber converted into a strafers. The A-20 was first, and strafing versions of the B-26 and A-26 were also produced. The Mitchell was the most successful twin-engined bomber conversion, however, making it the aircraft most closely associated with this concept.

IJN DESTROYER

The destroyer emerged as a warship class in the 1890s in response to the threat posed by the newly developed torpedo boat. The latter were small, fast, and expendable ships designed to launch torpedoes capable of sinking even the largest warship. To protect battleships, which were expensive vessels requiring years to build, navies developed the torpedo boat destroyer to counter them.

The torpedo boat destroyer (the name was soon shortened simply to destroyer) was another small, fast warship often only slightly larger than the torpedo boats it hunted. The vessel had to be fast in order to catch its prey. The ship did not need to be large, however – only big enough to carry guns capable of disabling torpedo boats and improve its seakeeping abilities so that it could keep up with the ocean-going cruisers and battleships it was intended to protect. Being small also meant destroyers could be constructed in large numbers. Cheap to build and easy to replace, destroyers were more expendable than the ships they were intended to protect.

High speed and agility made destroyers an ideal platform from which to launch torpedoes. Even the first destroyers carried torpedo tubes, often as many as, or more than, the torpedo boats they were defending against. Since they duplicated the function of torpedo boats, and had greater capability, destroyers began replacing their erstwhile quarry between 1895 and 1914. By the time World War I commenced in July 1914, most nations had abandoned ocean-going torpedo boats in favor of destroyers. By World War II, the remaining torpedo boats were coastal craft, such as US patrol torpedo boats (PT boats), British motor torpedo boats (MTBs), and German E-boats.



The IJN's tradition of aggressive destroyer use dated back to the 1904–05 Russo-Japanese War. Until the start of the Pacific War in December 1941, Japanese warship design optimized destroyers for nighttime torpedo attacks – which they performed very successfully in the early stages of the conflict. (Author's Collection)

During World War I, submarines and aircraft emerged as growing threats to ships. Expanding their torpedo protection role, destroyers became the first line of defense for capital ships when targeted by submarines, especially after the development of the depth charge as a weapon that could attack such vessels when submerged. Ships dropping depth charges had to be fast to avoid suffering damage when they were set to detonate at shallow depth settings.

The quick-firing main guns destroyers carried were also capable of downing aircraft. Fitted in both turrets and open mounts, they could easily be fired at high elevation, unlike the casemate-mounted quick-firing guns then carried on cruisers and battleships. Agile destroyers were also more able to avoid air attack than larger cruisers and battleships.

Between the two world wars the destroyer matured as a multifunction warship, allowing it to employ torpedoes, depth charges, and antiaircraft weaponry. However, the destroyer's small size meant it could not be perfect in all four roles. The vessel's design was inevitably a compromise, optimizing the role felt most important, while retaining sufficient capability to function in the other roles. It could be superlative as either a surface

combatant, antisubmarine vessel, or antiaircraft platform, while doing poorly in the other two, or it could be very good at two of the three, at the expense of the third. Finally, the destroyer could merely be average at all three.

The IJN was an early adopter of both torpedo boats and destroyers. Being both cheap and easily built, they were an economical choice for a poor nation striving to field a powerful fleet. Their torpedoes gave destroyers a considerable offensive punch, despite the vessels' weak defensive capabilities. This suited Japan's military and naval philosophy, as the IJN sought to optimize its light units' attack capabilities. Japan felt weight and money expended on ship defense were resources better spent improving attack capabilities. As far as the IJN was concerned, if you hit an opponent hard enough with the first punch, he could not respond with a counterattack.

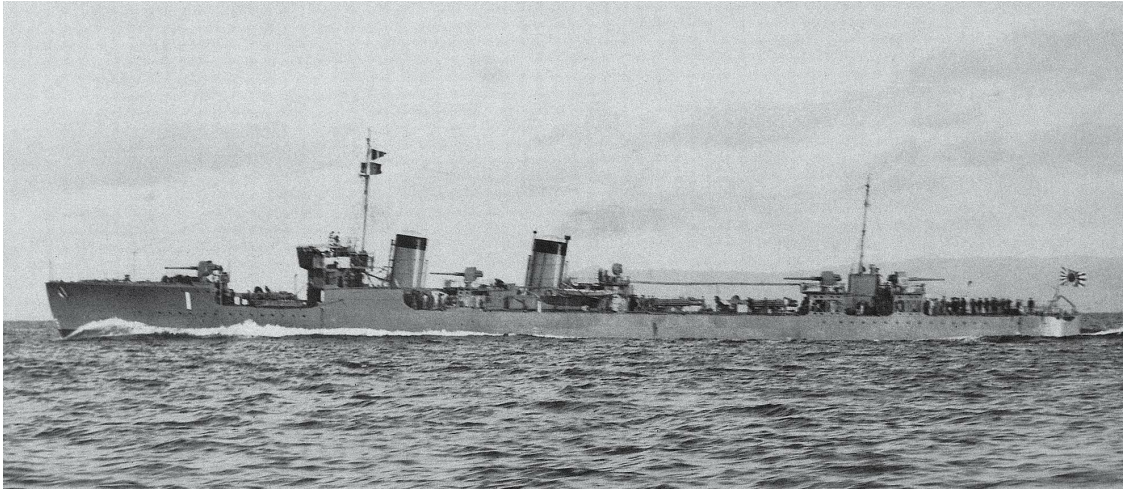
Japan ordered its first 12 destroyers from British shipyards in 1898. A further 20 destroyers or large torpedo boats were acquired from German, French, and British builders between 1899 and 1902, after which it began constructing destroyers domestically, starting with the seven-ship Harusame-class.

The IJN used its destroyers aggressively during the 1904–05 Russo-Japanese War, opening the conflict with a surprise torpedo attack on Port Arthur, on the coast of Northeast China, which disabled three Russian battleships. This action forced the Imperial Russian Navy to withdraw its fleet to Port Arthur's inner harbor, thus allowing IJN vessels to establish a blockade of the Liaodong Peninsula for the rest of the war.

Impressed by the success of its destroyers in the Russo-Japanese War, the IJN subsequently invested heavily in the construction of such vessels. Between 1905 and the start of World War I, Japan constructed 36 new destroyers, including the mass-produced Kamikaze-class started during the Russo-Japanese War. It went on another destroyer-building binge during World War I, launching a further 30 vessels between February 1915 and March 1918.

The destroyer evolved quickly during the 13 years between the end of the Russo-Japanese War and the end of World War I. The destroyers Japan had been building prior to and during the latter conflict were small in size, being virtually torpedo boats. The first class of destroyers Japan built after World War I, the 21 ships of the Momi-class, were similar in size at 1,036 tons and 275ft in length. Meanwhile, the US Navy – the IJN's chief rival – had begun

building 1,200-ton destroyers during World War I. The Momi-class vessels were effectively obsolete when they were launched.



Kamikaze-class vessels of the early 1920s reflected the state of the art in Japanese destroyer design before the introduction of the Fubuki-class from 1928. Ironically, the older warships had better antiaircraft capabilities than the newer Fubuki-class and subsequent designs of the 1930s. Here, the name ship of the Kamikaze-class is seen underway in 1936. *Kamikaze* survived the war, being surrendered to the Allies in Singapore in August 1945. (Author's Collection)

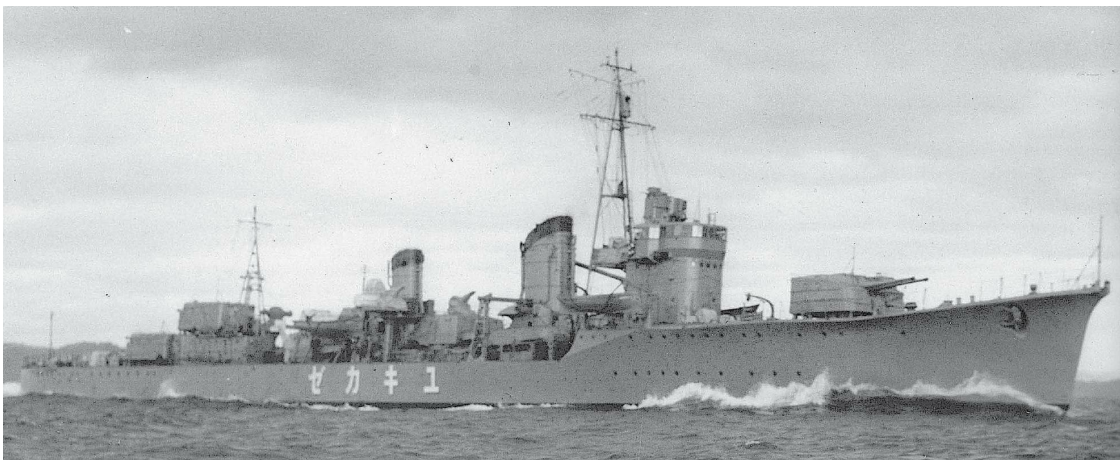
Between 1919 and 1927 Japan constructed bigger, more capable destroyers displacing around 1,300 tons. Larger and more capable than US flush deck destroyers of the same period, they were well-balanced ships. Each one carried six torpedo tubes, and its main battery was dual-purpose – its guns could also be used as antiaircraft weapons. Later versions included depth-charge launchers, although as built these ships had only four 0.30-cal. machine guns for light antiaircraft defense. These vessels matched contemporary British and American destroyer designs.

In 1923, however, the IJN's General Staff decided to leapfrog their rivals with a new design, the Fubuki-class. In a break from previous Japanese destroyers, they were large, with the initial design starting at 1,750 tons and completed examples weighing in at 2,050 tons. No Allied destroyer would match that size until the Benson-class began reaching the US Navy in 1941. They were fast, with a top speed of 38 knots. They were heavily armed, with a main battery of six 127mm guns carried in three fully enclosed twin turrets and nine 610mm torpedo tubes, in three triple torpedo tube mounts. They also

carried one rack of depth charges and two 13mm (0.50-cal.) machine guns giving them antisubmarine and antiaircraft capabilities.

Fubuki-class destroyers were heavily optimized for surface warfare against other ships. With the vessels' principle function being to win surface battles against other warships, they were primarily a platform from which to launch 610mm torpedoes. These ships carried a torpedo in each tube and a single reload for each one, with crews being trained in reloading the tubes under combat conditions. Once their torpedoes were expended, the Fubuki-class destroyers had a powerful main gun battery with which to continue a surface battle. By comparison, British destroyers of the late 1920s were typically armed with four 4.7in. main guns, while the US flush deck destroyers had four 4in. guns, although only three could be brought to bear for a broadside.

However, to achieve this firepower, the Fubuki-class ships sacrificed antisubmarine and antiaircraft capabilities. With only one rack of depth charges and magazine storage for just 20 depth charges, its antisubmarine threat was minimal. This was considered acceptable by the IJN because these ships were intended for fleet service only, where high speed was seen as the best defense against submarines. Older destroyers that were both slower and obsolescent could be used in the antisubmarine role instead.



Yukikaze was a Kagero-class Type A destroyer, being one of 19 such vessels commissioned by the IJN in 1939–41. These ships were the lineal descendants of the Fubuki-class, representing the apex of Japanese destroyer design on the eve of the Pacific War. (Naval History and Heritage Command)

The antiaircraft capabilities of the Fubuki-class ships were even more lacking. While the 4.7in. guns of the earlier destroyers were quick-firing

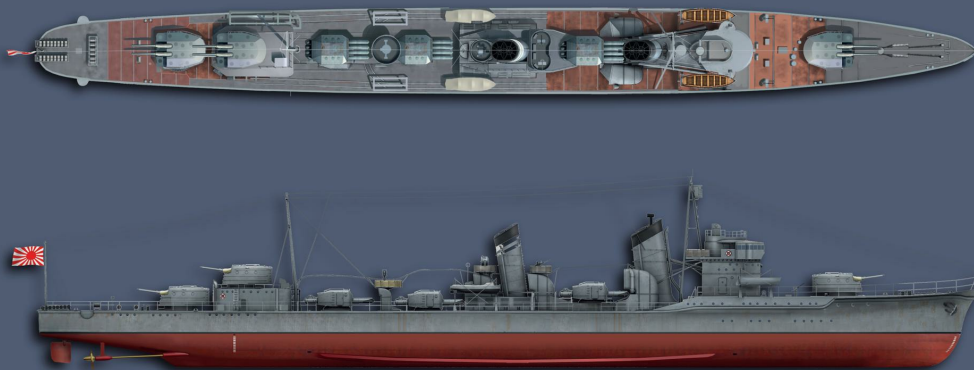
dual-purpose guns capable of engaging aircraft, the 127mm gun as mounted by this new design was a retrograde step. The latter weapon could initially only elevate 40 degrees, although this was later increased to 70 degrees following modification, thus allowing them to engage aircraft. Nevertheless, they were only theoretically anti-aircraft guns. Having a separate shell and powder bag, their rate of fire was slow, as was the weapon's training rate. Keeping the gun pointed at a fast-moving aircraft would be a challenge, and it could not be reloaded at elevations above ten degrees. Although an excellent gun against surface ships, it was virtually useless against aircraft.

The destroyer's light anti-aircraft armament was just as inadequate. Initially, these ships were armed with only two 7.7mm machine guns. This sufficed against the wood-and-fabric biplanes of the 1920s, when these ships were designed. They were wholly inadequate against the fast all-metal monoplanes that appeared in the late 1930s and fought in World War II.

Despite its weaknesses, the Fubuki-class remained the template for Japanese destroyers through to 1942. Between 1928, when *Fubuki* entered service, and 1943, Japan laid down 53 destroyers along these lines. The later classes replaced the three triple torpedo mountings with two quad tubes. They also had improved anti-aircraft defenses. Initially, 13mm machine guns replaced the 7.7mm weapons, with the former eventually making way for four 25mm anti-aircraft cannon. Early-build Fubuki-class ships mounted two additional single 13mm machine guns after the Pacific War started, with single or twin 25mm guns replacing one pair of 13mm guns in 1942–43. Even with these modifications, the destroyers remained highly vulnerable to air attack.

Nevertheless, the Fubuki-class remained the supreme design for the intended mission of IJN destroyers – defeating enemy warships. Indeed, the Allies could not match the power of these destroyers in that respect until the arrival of the Fletcher-class in 1942. Unfortunately for the IJN, its ships were not facing enemy destroyers at the Battle of the Bismarck Sea. They were facing medium bombers; an enemy they were unprepared to fight.

SHIRAYUKI



The Fubuki-class was the IJN's attempt to put a light cruiser's punch in a destroyer's hull. It packed a battery of six 127mm guns and tubes to launch nine 610mm torpedoes into a hull displacing 1,750 tons. The guns were in gas-proof, splinter-proof twin turrets, and the destroyers carried reloads for the torpedo tubes. The design sacrificed structural strength (necessitating a later rebuild) to combine this offensive capability with high speed and long range.

It also neglected anti-aircraft and antisubmarine capabilities to maximize surface combat power. *Shirayuki* was the second of 24 Fubuki-class destroyers built for the IJN. Laid down on March 19, 1927 at the Yokohama shipyard, it was launched on March 20, 1928 and commissioned on December 18 that same year. Although the vessel's name (White Snow) maintained the water and weather theme of the Fubuki-class, it was actually named after Emperor Hirohito's favorite white stallion. *Shirayuki* served as Rear Admiral Masatomi Kimura's flagship during the Battle of the Bismarck Sea, where it was sunk.

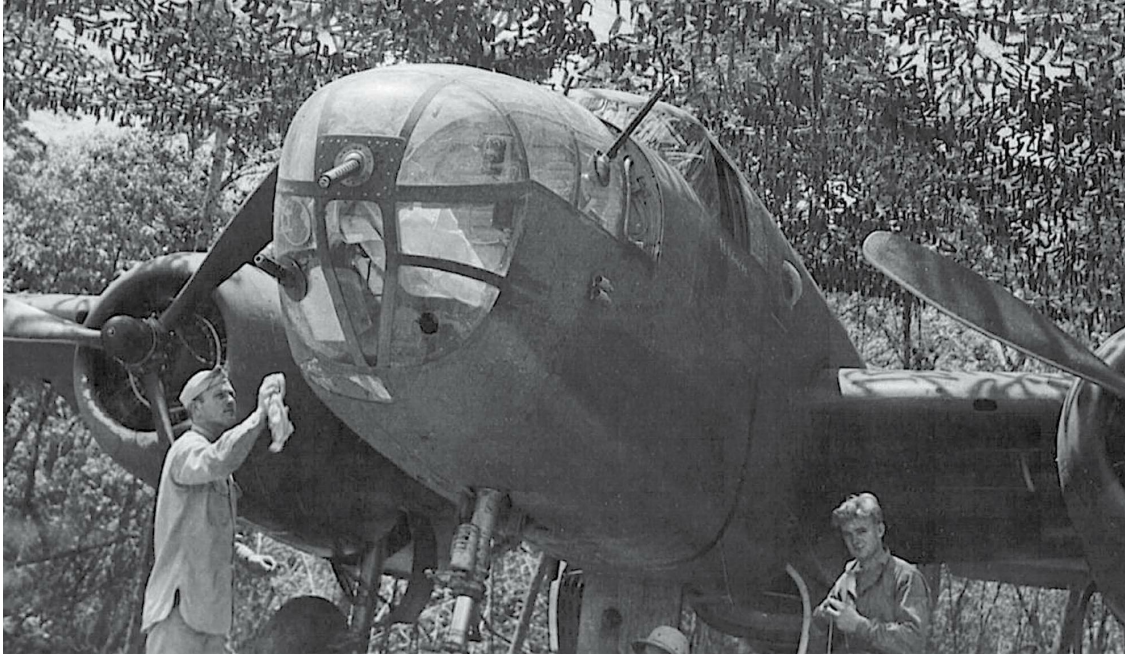
TECHNICAL SPECIFICATIONS

B-25 MITCHELL

The B-25 was a semi-monocoque aircraft using aluminum for both the structural elements and the skin. It was a mid-wing aircraft with retractable tricycle landing gear, a horizontal stabilizer set at the top of the fuselage, and twin rudders. Monocoque construction is one where all structural loads are supported by the aircraft's skin. In semi-monocoque construction, while the skin supplies some of the strength, the framing provides most of the aircraft's structural strength. It offers structural redundancy, allowing the skin and frames to share the load.

The primary structural material used in the B-25 was aluminum. Weighing one-third of an equivalent volume of steel, aluminum is corrosion-resistant and easy to manufacture, making it an ideal structural and covering material for aircraft. It was also stronger and easier to work with than the wood and fabric used in previous generations of aircraft.

The B-25 used aircraft construction techniques typical of the period. These included transverse frames on the wings and fuselage, and fuselage frames that were linked together with metal stringers, while the wings used full cantilever construction. The mid-wing had a center section anchored to the fuselage, with the inner wing panels running to the engine mounting. The outer wings bolted onto the center wing section. The skin was attached to the frames with aluminum rivets. Removable panels were secured using Dzus fasteners. The aircraft was not intended to be pressurized, so its profile was that of a rounded rectangle, maximizing usable internal volume.



This standard B-25C, assigned to the Fifth Air Force's 38th BG in November 1942, reveals how lightly armed these aircraft were when they initially arrived in New Guinea. It has a flexibly mounted 0.50-cal. machine gun for the bombardier, and a fixed weapon of the same caliber in the lower right side of the nose. (NARA)

The fuselage had three main structural components: forward, middle, and tail. The forward section contained the nose, with the bombardier's station or nose guns and the flightdeck where the pilot, co-pilot, and navigator worked. In later versions (B-25H onward), it also contained the dorsal turret. The middle section held the bomb-bay and a passage linking the forward and rear fuselage. The rear section comprised everything aft of the bomb-bay. In the B-25C/Ds that fought at Bismarck Sea, it also contained both turrets. In later versions, the waist and tail guns were located there.

The aircraft's main landing gear retracted into the engine nacelles, while the nose leg and wheel were housed in a compartment below the flightdeck. Tricycle gear offered two advantages over conventional tailwheel gear during take-off and landing. The former gave the pilot better visibility, especially on take-off, and made the aircraft less susceptible to nose-overs. On landing, it reduced the possibility of ground looping, while also offering better crosswind performance during the final approach.

These advantages compensated for the complexity of adding a retractable nose gear. Except for aircraft already in production (such as the Lockheed Hudson), all American multi-engined military aircraft procured after 1940

used tricycle landing gear. B-25s had a tail skid to protect the rear fuselage should the pilot over-rotate the aircraft on take-off.

The B-25 was a hauler. It could carry nearly 50 percent of its empty weight in payload – fuel, bombs, and ammunition. While long-range missions reduced bombload due to balancing fuel against bombs carried, the aircraft's ability to carry so much weight made it extremely versatile. This attribute also permitted the type of field modifications that led to the development of strafer versions of the B-25.

B-25C MITCHELL STRAFER COCKPIT



1. Altimeter correction card
2. Pilot's clock
3. Static pressure selector valve

4. Pilot direction indicator
5. Free air temperature indicator
6. Altimeter (behind control column)
7. Radio compass
8. Directional gyro
9. Airspeed indicator
10. Turn-and-bank indicator
11. Accelerometer
12. Turn-and-bank needle valve
13. Flight attitude indicator
14. Rate-of-climb indicator
15. Nose wheel turn indicator lights
16. Magnetic compass
17. Compass correction card
18. Section (vacuum) gauge
19. Remote-reading compass
20. Autopilot oil pressure gauge
21. Autopilot directional gyro unit
22. Autopilot turn-and-bank gyro unit
23. Manifold pressure gauge
24. Oil pressure gauge
25. Main tanks fuel level indicator
26. Auxiliary tanks fuel level indicator
27. Tachometer indicator
28. Oil temperature indicator
29. Fuel pressure indicator
30. Cylinder hood temperature indicator gauge (behind control column)
31. Landing gear and flap position indicator
32. Hydraulic pressure gauge
33. Brake pressure gauge (behind control column)
34. Carburetor air temperature indicator
35. Autopilot servo speed control knob panel
36. Radio jack box
37. Heated clothing electrical control unit
38. Radio compass control unit
39. Pilot's sliding window control
40. Adjustable spotlights
41. Ventilation inlet knob
42. Control columns
43. Steering yokes
44. Rudder pedals
45. Elevator trim
46. Throttles

47. Propeller variable-pitch controls
48. Fuel mixture controls
49. Parking brake handle
50. Propeller and mixture control lock
51. Throttle control lock
52. Autopilot on/off control
53. Supercharger controls
54. Control levers for engine cowl flaps
55. Control levers for landing gear
56. Carburetor heat controls
57. Wing flaps
58. Engine fire extinguisher controls
59. Oil cooler shutters
60. Emergency bomb release button
61. Gun trigger button
62. Throat microphone switches
63. Radio transmitter box
64. Radio receiver box
65. Heated clothing electrical control unit
66. Radio jack box
67. Co-pilot's sliding window control
68. Ventilation inlet knob
69. Pilot's seat
70. Co-pilot's seat
71. Gunsight

CREW

The B-25C/Ds used during the Battle of the Bismarck Sea had a crew of five – pilot, co-pilot, navigator/radio operator, bombardier, and gunner. The pilot (or aircraft commander) and co-pilot flew the aircraft, the navigator/radio operator navigated it (including pre-flight planning of the route) and ran the radios, and the bombardier manned the nose gun during most of the mission, and dropped the bombs when the aircraft was over the target.

In the B-25C/D, the gunner, the sole occupant of the rear of the aircraft, was responsible for operating both the dorsal and ventral turrets. This was another reason why the ventral turret was often removed, for it was impossible for the gunner to operate both dorsal and ventral turrets in combat. Simultaneous operation of both weapons required either the navigator/radio operator or co-pilot to travel to the rear via the small crew tunnel over the bomb-bay. This in turn left them unable to carry out their primary function.

In versions field-modified as strafers, with guns filling the nose, the bombardier was omitted, leaving a crew of four. The pilot assumed responsibility for dropping the bombs, as well as firing the nose guns. Since strafers were used in low-level attacks, bombing “by eye” was as accurate as using a sophisticated bombsight.

In later versions of the Mitchell, crew responsibilities switched. In the B-25G, the gunner operated the dorsal guns, while the navigator/radio operator manned the ventral turret. He also doubled as the cannoneer, loading the 75mm gun carried by this version. The pilot and co-pilot filled out the crew, with the former again also serving as the bombardier. In the B-25H and subsequent versions, the co-pilot was removed to permit a second gunner to be added. The navigator now exclusively performed his primary role, with the radio operator serving as the cannoneer instead, the flight engineer also manning the dorsal turret, a single gunner operating both waist guns, and a gunner manning the tail guns. The B-25J restored the co-pilot, with the navigator doubling as bombardier, the radio operator manning the waist guns, the flight engineer operating the dorsal turret, and a gunner manning the twin tail guns.



The B-25J was the ultimate version. Fitted with cheek guns in blisters below the pilot, it restored the bombardier's position. NAA also added a tail turret and waist guns, and provided kits to modify the medium bombers into dedicated strafers. These newly delivered B-25J-5s, assigned to the 42nd BG, were photographed at Mar airstrip near Cape Sansapor, in Dutch New Guinea, in late September 1944. (NARA)

ENGINES AND ENDURANCE

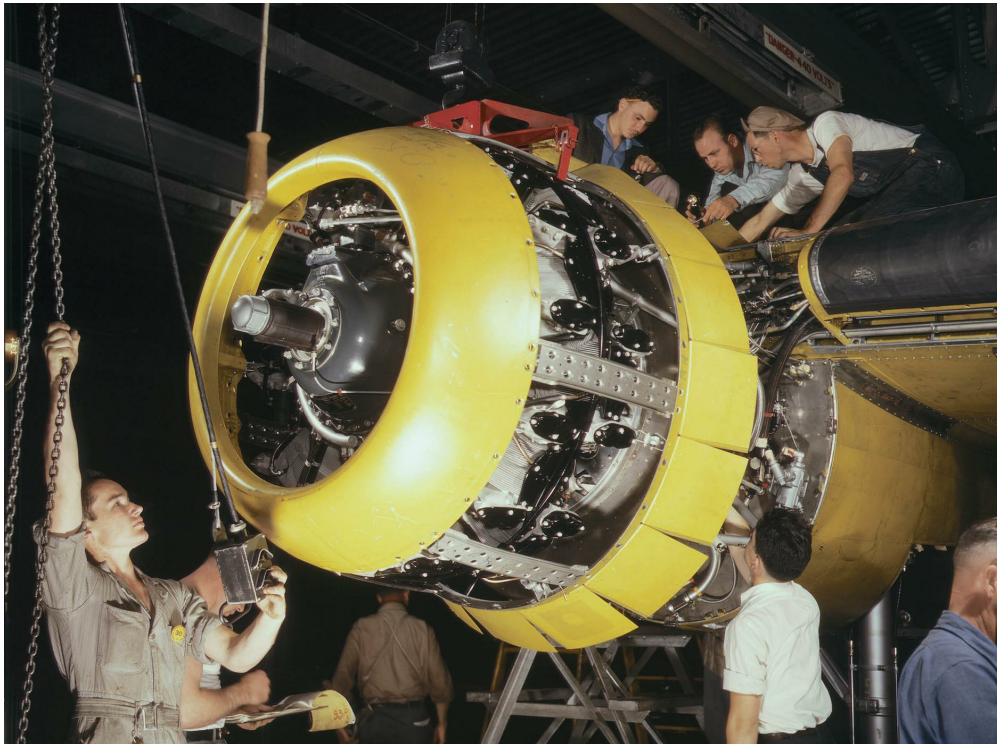
The Mitchell was equipped with two Wright R-2600 engines producing 1,700hp each. Models C through H had R-2600-13 engines, while the J-model used R-2600-29s. The Wright 2600 Twin Cyclone was a radial engine with two staggered rows of seven cylinders. It was air-cooled, which meant it relied on air flowing over the cylinders for cooling. The cylinders displaced a volume of 2,604 cubic inches (hence the name R-2600, for radial-2,600 cubic inches). The engines had centrifugal superchargers to increase airflow into the cylinders, boosting performance.

The R-2600 was developed in the mid-1930s, going into production in 1938. The engine had its share of teething problems during the first two years of use, but by 1942 it had developed into a reliable powerplant. The R-2600 was still vexed by cylinder corrosion in the period from December 1942 through to May 1943, when the problem was finally solved by adjusting its lubrication levels.

The air-cooled engine performed reliably, despite being flown from primitive airfields in the hot and humid tropical climate of New Guinea. The lack of a hydraulic cooling system (common in aircraft with inline engines, such as the P-38 and P-39) simplified maintenance.

The R-2600s could push the early C/D-models used during the Battle of the Bismarck Sea to speeds up to 284mph. The medium bomber's cruising speed of 230mph was slow by aircraft standards. Fighters designed contemporaneously with the Mitchell routinely cruised at more than 300mph, and the four-engined B-29 cruised at 290mph. Nevertheless, the B-25 was considerably faster than any warship it encountered.

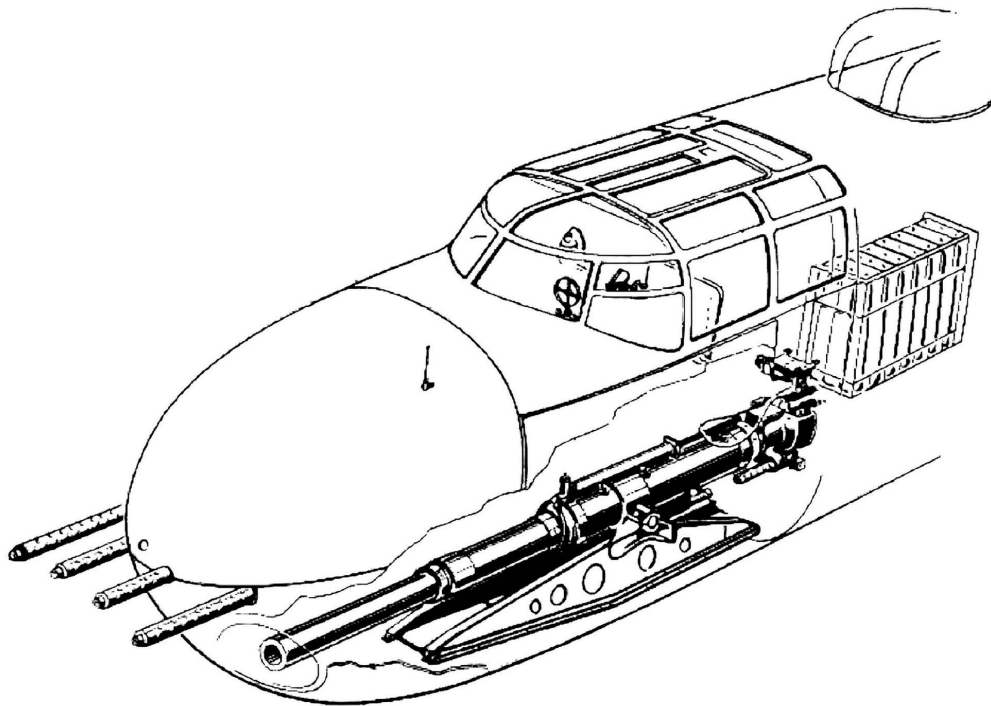
The Mitchell could carry 3,000lb of bombs to a target 750 miles away, and still have adequate fuel to make it back to base. Bombloads could be increased if less fuel was carried, or decreased to allow more fuel and longer range. Rabaul, the main Japanese base in the region, was almost 500 miles from Port Moresby. The area over which the Battle of the Bismarck Sea was fought was half that distance.



The B-25C/D was fitted with two Wright R-2600 radial engines, each rated at 1,700hp. Here, NAA assembly workers carefully mount an engine on a B-25C at the company's Inglewood plant. More than 50,000 R-2600s were built, with the engine also powering the A-20, as well as several key US Navy types. (Library of Congress, Washington, D.C.)

ARMAMENT

The B-25s used during the Battle of the Bismarck Sea were armed primarily with Browning M2 0.50-cal. machine guns and 500lb bombs. Some later versions of the aircraft also carried a single forward-firing T-13E1 M5 75mm cannon. The M2 was used defensively in the aircraft's turrets to protect the B-25 from air attack and offensively in fixed forward-firing mounts (along with the 75mm cannon) as antishipping or ground target weapons. Bombs and, later in the war, solid fuel 4.5in. rockets supplemented ground strikes against ships, fortifications, installations and vehicles.



The success of field-modified "gun" Mitchells led NAA to produce the B-25G version mounting a T-13E1 M5 75mm cannon and four nose-mounted 0.50-cal. machine guns. A dedicated "cannoneer" loaded shells into the 75mm howitzer. The arrangement is shown in this diagram. (Author's Collection)

All US aircraft armed with 0.50-cal. machine guns used the Browning M2, a larger and more powerful version of the company's 0.30-cal. M1919. Both weapons were air-cooled, and highly reliable. The US Navy and USAAF both used the M2 and M1919, with dedicated versions installed in aircraft. The M2 had a muzzle velocity of 2,910ft per second when firing M33 ball projectiles. It could expended 750 to 850 rounds per minute. The gun fired a 52g bullet that was capable of penetrating one inch of armor and the

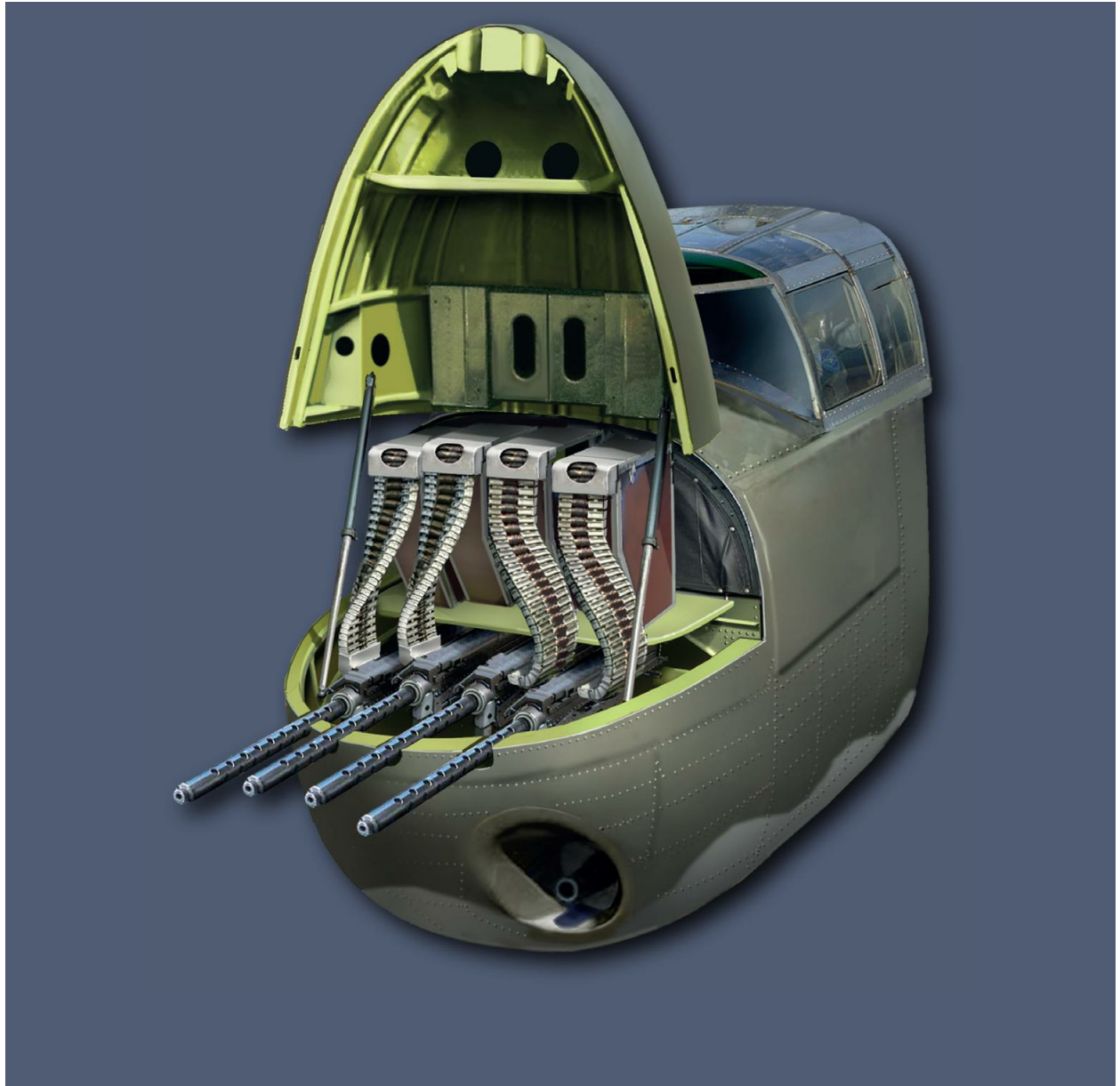
structural steel of unarmored ships. It was potent against small ships, vehicles and buildings, as well as other aircraft.

Browning M2 0.50-cal. Machine Gun Specification	
Overall length	57.09in.
Barrel length	36.0in.
Bore	0.5in.
Weight of gun	61.4lb
Weight of barrel assembly	10.2lb
Rate of fire	700 to 850 rounds per minute
Muzzle velocity	2,910ft per second
Effective range	2,000 yards
Cartridge Length	5.45in.
Cartridge Weight	3.6 to 4.2oz
Projectile Weight	1.4 to 1.6oz
Projectile Types	ball, armor-piercing, incendiary, tracer

While effective against aircraft, the 0.50-cal. guns used by strafers B-25s were primarily intended for employment against shipping and other surface targets. The Mitchell was not maneuverable enough to dogfight fighters. A strafing B-25 would have shredded any Japanese fighter making a head-on pass, and few enemy pilots were foolish enough to do so. It was easier to attack a Mitchell from astern. The B-25C/Ds had weak defensive armament – essentially only the Bendix dorsal turret, with its twin 0.50-cal. machine guns.

B-25G M2 0.50-cal. MACHINE GUNS

Four Browning M2 0.50-cal. machine guns were mounted in the nose of the dedicated B-25G strafers. Unlike the field-modified B-25C/D strafers of 1942–43, the G-model's weaponry was installed by NAA in the factory, which meant all four guns were evenly distributed horizontally. Field modification of B-25C/Ds by the Fifth Air Force had seen the guns fitted vertically in a "two-by-two" arrangement. In both cases, each weapon was fed by a 400-round magazine, allowing the pilot roughly 30 seconds of continuous firing. When the ammunition boxes for all eight 0.50-cal. machine guns were full, the rounds weighed about 800lb in total.



The early versions were especially vulnerable to attacks from behind and below. The Bendix ventral turret was ineffective. It was replaced with the Sperry ball turret in heavy bombers, but B-25s were too small to accommodate it. Later versions added a tail turret and flexible waist guns. These mitigated the threats posed by beam or stern attacks, but even with these the B-25 found it difficult to defend against attacks from below. Antishipping missions were flown at an altitude of 500ft during the attack phase, making fighter attack from below impractical, but when at cruising altitudes to and from their targets, Mitchells were best safeguarded by effective fighter escort.



The B-25H followed on from the G-model, and it again had a 75mm cannon, as well as eight forward-firing machine guns. NAA delivered 1,000 examples in 1943–44, including this aircraft, 43-4271, of the First Air Commando Force based in India. It is seen here pulling away from a strike on a Japanese supply area at Wuntho, in central Burma, in early 1944 (NARA)

A lightweight version of the US Army's 75mm cannon was added to improve the Mitchell's antishipping capabilities after the Battle of the Bismarck Sea. The T-13E1 M5 fired a 20lb round with a 14.9lb warhead. Twenty-one rounds were carried. After the gun was fired, a new round had to be loaded by the cannoneer. The cannon was deadly if it hit, but the weapon's slow rate of fire and the small number of rounds carried limited its usefulness.

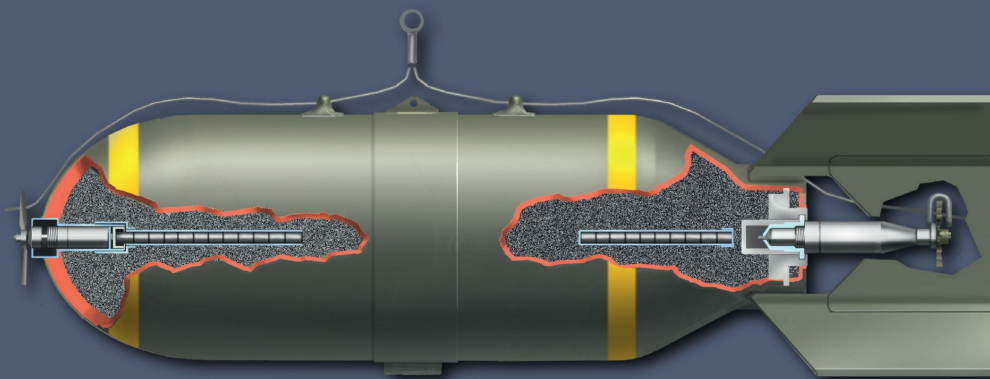
M-58/58A1 General Purpose Bomb Specification	
Overall length	56.8in.
Body length	45.0in.
Body diameter	14.2in.
Wall thickness	0.3in.
Tail length	13.9in.
Tail width	18.9in.
Tail weight	12.3lb
Casing weight	235.7lb
Filling weight	262–275lb (varies due to type of filling; Amatol, TNT, and Composition B have different densities)
Total weight	510–535lb
Charge/weight ratio	51 percent

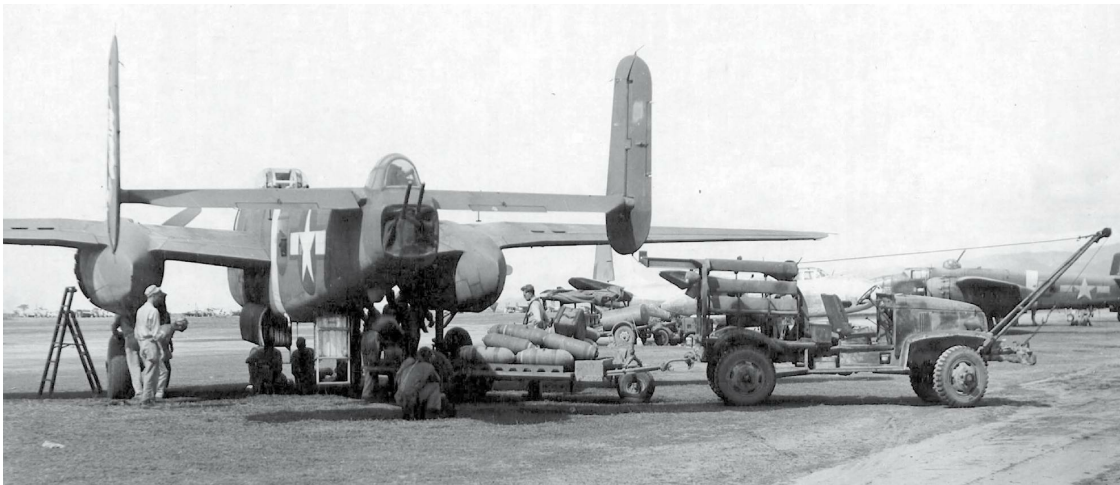
While B-25s frequently dropped fragmentation, incendiary, and phosphorous bombs in the Pacific War, the main weapon used against shipping, including during the Battle of the Bismarck Sea, was the high-explosive general purpose bomb. In March 1943 this would have been the 500lb M58 and M58A1 semi-armor-piercing bomb. In all US semi-armor-piercing bombs, the steel case was roughly half the weapon's weight, with the remainder consisting of explosive, typically TNT. The 500lb bomb worked best, as it was also effective against small warships, cargo vessels, and harbor craft, such as tugs and barges, which formed the main targets for B-25s undertaking antishipping missions.

AN-M64 500lb BOMB

The AN-M64 500lb bomb was one of a series of general purpose bombs developed for use by both the US Navy and USAAF. It proved to be the weapon of choice for skip and mast-top bombing attacks in the Pacific theater. The 500lb weapon was just one in a series of bombs used by Allied aircraft, ranging in size from 100lb through to 2,000lb. All had the same shape, with a cylindrical body and a hemispherical nose. The latter was what allowed these bombs to skip over the water. It had a steel casing, and was filled with an explosive, typically Amatol or TNT. Bombs used against ships were armed with a tail-mounted fuze set to a five-second delay. This allowed the aircraft to escape the blast zone before the bomb exploded.

The 500lb bomb was large enough to seriously damage an unarmored vessel, including large transports and warships up to the size of a light cruiser. A B-25 could carry four M64s, which were dropped in pairs so as to allow an aircraft to conduct two skip or mast-top attacks, or make just one pass using both skip and mast-top bombing.





A B-25J from the 345th BG is prepared for loading with 500lb bombs (the latter have yet to be fitted with their tail fin units) in 1944. Armorers have used a dedicated M6 G35 bomb server version of the ubiquitous Chevrolet G506 “deuce and a half” truck to transport the ordnance to the aircraft. This photograph was possibly taken at the Nadzab airfield complex in the Markham Valley, northeast of Lae. The Mitchell could carry up to 3,000lb of ordnance in its bomb-bay. (Michael J. Claringbould Collection)

B-25C/D Specifications	
Engines	two 1,700hp Wright R-2600-13 radial engines
Dimensions	
Span	67ft 7in.
Length	53ft 0in.
Height	15ft 9in.
Wing area	610 sq ft
Weights	
Empty	20,300lb
Loaded	33,500lb
Performance	
Max speed	284mph

Combat range	1,535 miles
Ceiling	21,200ft
Payload	2,000lb (strafers); 3,000lb (standard)
Armament	(strafers) eight fixed forward-firing 0.50-cal. machine guns (four in nose, four in cheek mountings), two 0.50-cal. machine guns in dorsal turret, two 0.50-cal. machine guns in ventral turret (normally removed) (standard) one flexible 0.50-cal. machine gun in nose, two fixed forward-firing 0.50-cal. machine guns (cheek mountings), two 0.50-cal. machine guns in dorsal turret, two 0.50-cal. machine guns in ventral turret (normally removed)

IJN DESTROYER

Three classes of destroyers fought at the Battle of the Bismarck Sea, namely three Fubuki-class, three Asashio-class, and two Kagero-class vessels. While the oldest, the Fubuki-class *Shirayuki*, entered service in 1928, and the newest, the Kagero-class *Tokitsukaze*, was commissioned in 1939, the eight destroyers had more similarities than differences. All were roughly the same size, had two funnels and boasted the same main gun configuration – one twin turret forward and two aft, with the No. 2 turret “superfiring” over the aft turret. The earlier Fubuki-class ships had nine torpedo tubes in three triple mounts, while the other classes were fitted with eight torpedo tubes in two quad mounts. All carried reloads for their tubes.

These destroyers carried two depth charge racks, originally with nine Type 96 or 97 depth charges. By World War II they also carried one set of reloads. Their anti-aircraft armament at the start of the campaign in the Pacific consisted of two 13mm and two 25mm guns on manually operated single mounts. By March 1943, this battery was being upgraded to four 25mm guns, and throughout the course of that year additional weapons of this caliber were added. Manually operated twin mounts replaced the single mounts, with additional anti-aircraft guns being added in 1944–45. In some cases, pedestals for 25mm mounts were added behind the aft torpedo tubes or the after

127mm gun mount, with the latter being removed to allow multiple 25mm mounts (including powered triple mountings) to be installed in its place. All of this was done after the Battle of the Bismarck Sea, largely in reaction to losses suffered by the IJN in that action.



Lead ship of the ten-strong Asashio-class of destroyers, *Asashio* is seen here whilst undergoing sea trials in July 1937 following its completion by the Sasebo Naval Arsenal. A veteran of the Battle of Midway, *Asashio* was one of three destroyers of this class involved in the Battle of the Bismarck Sea. (Public Domain)

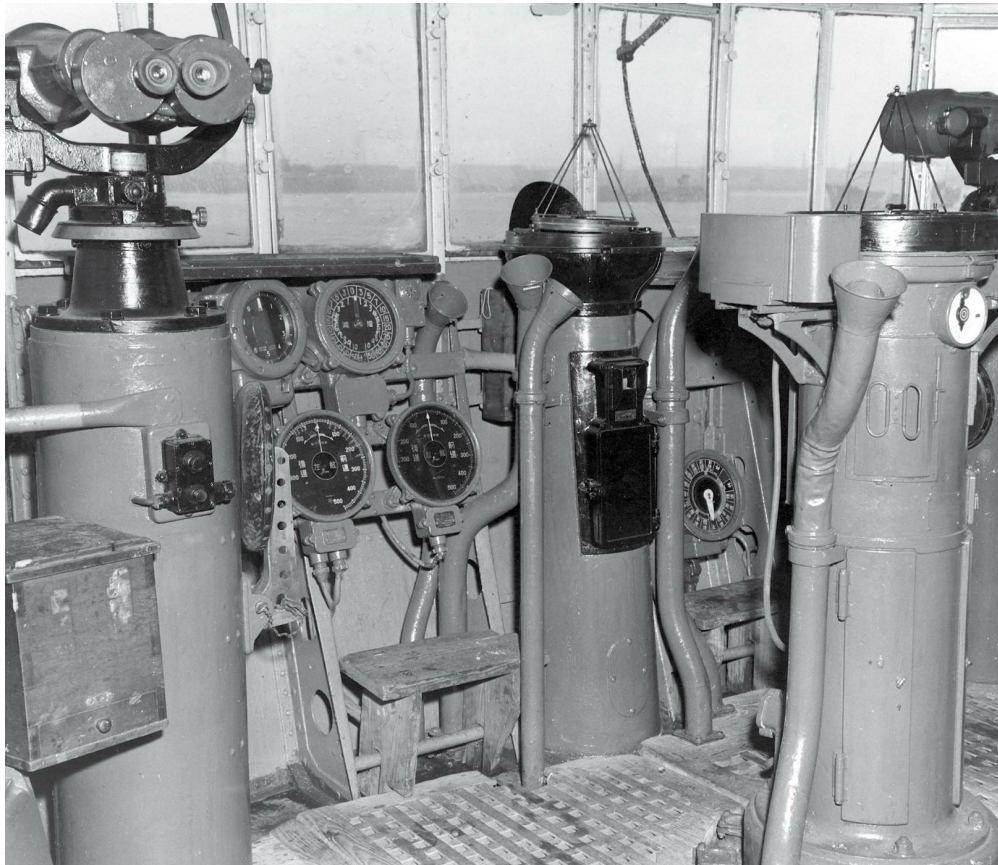
As previously noted, the large displacement and impressive main battery armament of the IJN's destroyers favored the Japanese desire to optimize the vessels' surface warfare capabilities. They delivered outstanding results during the numerous night surface actions fought during the Pacific War, especially in the waters around the Solomon Islands in 1942–43. Yet this performance was obtained at the expense of the ships' antiaircraft capabilities, leaving them vulnerable to air attacks.

STRUCTURE

The Fubuki-class and follow-on classes of “special destroyers” (as the Japanese initially categorized these ships) were an attempt to circumvent aspects of the 1922 Washington Naval Treaty signed by the USA, Great Britain, France, Italy, and Japan. The agreement limited the total tonnage of cruisers that could be built by each signatory, but set no tonnage restriction on destroyers. The Fubuki-class attempted to reproduce the capabilities of the pre-World War I scout cruiser on a destroyer hull. Those scout cruisers

typically had a displacement of 2,000 tons, carried a main armament of 5in. guns and mounted between six and ten torpedo tubes. The subsequent 1930 London Naval Treaty classified destroyers as vessels less than 1,850 tons; Fubuki-class destroyers had a standard displacement of 1,750 tons.

Riveting required overlapping hull plates, while welding permitted butt-seamed plating, reducing weight. This was critically important so as to ensure the vessels did not break the limits imposed by the treaties, which Japan had signed. The exterior hull was riveted for extra strength, while welding was used on interior framing and bulkheads. Operational experience quickly revealed that the design was both top-heavy and too fragile for Pacific Ocean conditions. The Fubuki-class destroyers were rebuilt, increasing their displacement to 2,090 tons, which matched subsequent classes.

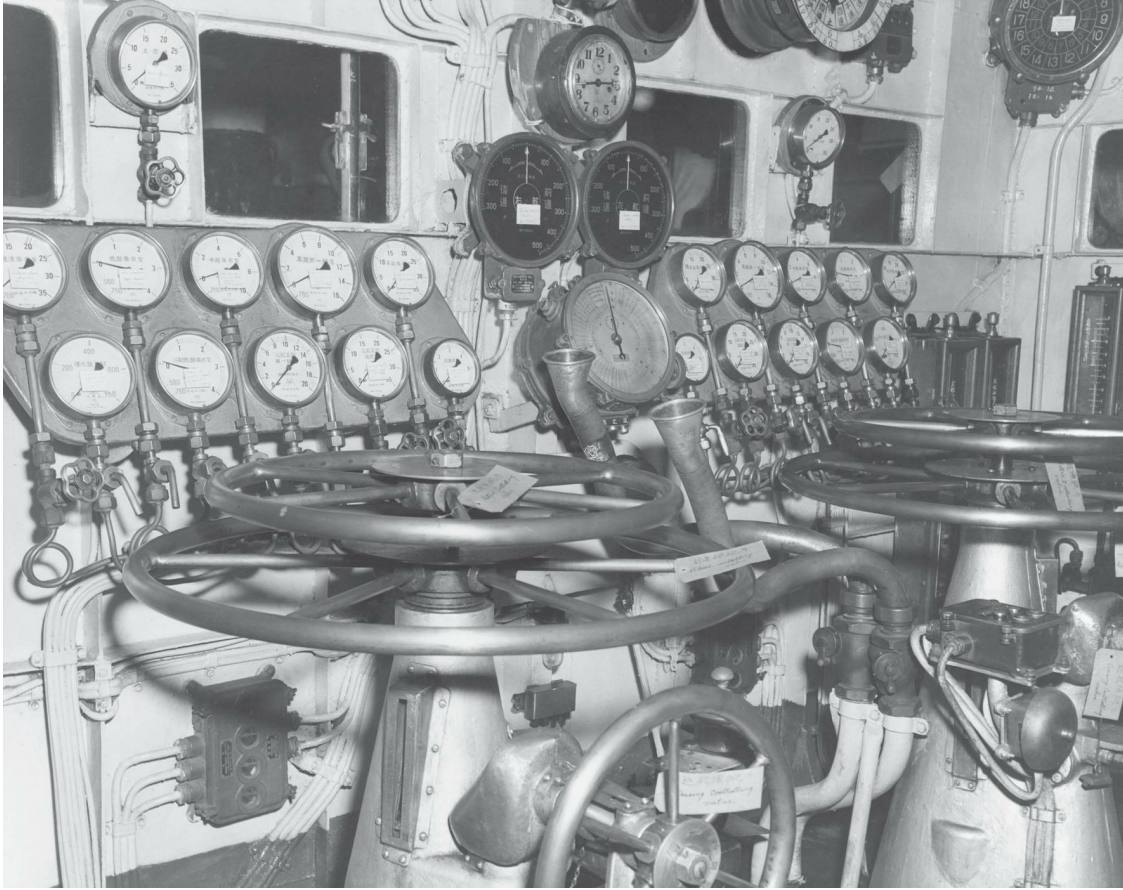


The view from the bridge of a Kagero-class destroyer. The captain conned the ship and ran the battle from here. Note the rangefinder (right) and binoculars (left) used during night surface battles. (Naval History and Heritage Command)

Despite the significant change in their weight, the Fubuki-class ships were reported by the IJN as having a displacement of 1,750 tons for treaty purposes, especially after the 1930 London agreement introduced total tonnage limits for destroyers. Japan withdrew from the 1930 London Naval Treaty in 1936, ignoring its limitations for designs drafted after 1934, including the Asashio- and Kagero-class destroyers, which were larger and had more robust hulls.

All “special destroyer” classes remained similar in size and performance, however. Minor changes in weight saw improvements made on the margins, but the basic design fulfilled Japanese requirements for desired destroyer performance in an economical package. Improving the armament would increase the displacement enough to require the installation of significantly larger engines, which in turn meant greater displacement, and the fitting of still larger engines.

Principle Dimensions			
	Fubuki-class	Asashio-class	Kagero-class
Displacement [standard]	2,090 tons	2,370 tons	2,000 tons
Length [waterline]	378ft 0in.	377ft 4in.	381ft 3in.
Breadth [maximum]	34ft 1in.	33ft 11in.	35ft 5in.
Depth [deep]	10ft 3in.	12ft 2in.	12ft 4in.



The engine control room of *Yukikaze*, one of the destroyers that participated in the Battle of the Bismarck Sea. Its layout was typical of that seen in most IJN Special Type and Type A destroyers built during the interwar period. (Naval History and Heritage Command)

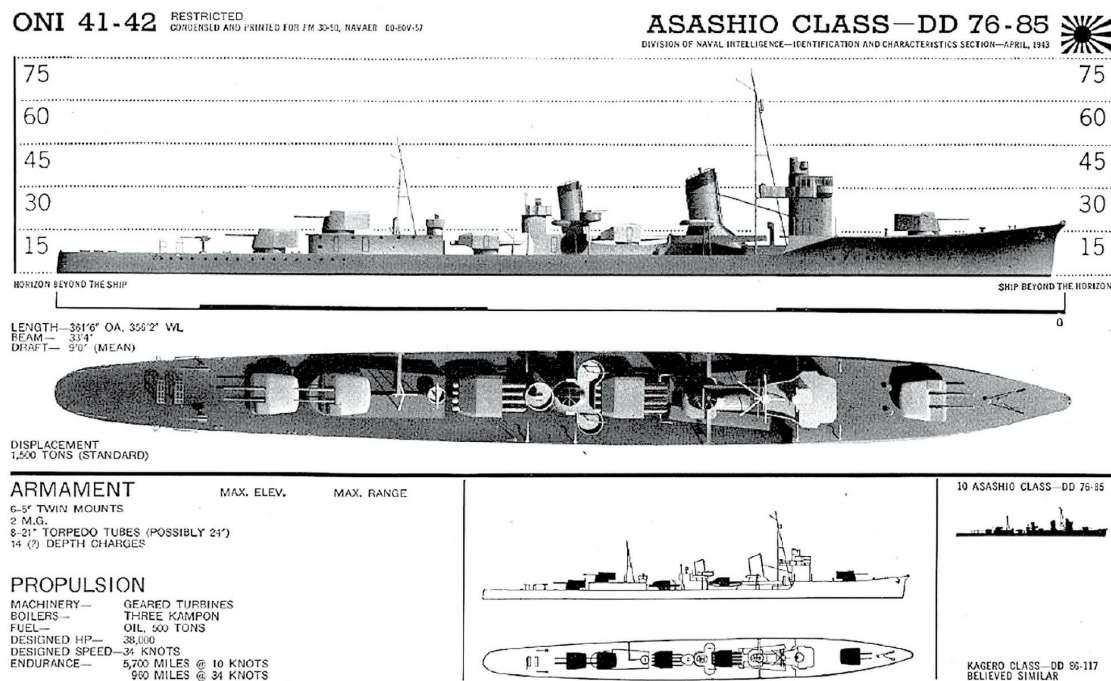
MACHINERY

The initial specification under which the Fubuki-class destroyers were built required a top speed of 39 knots. To achieve this, the vessels were fitted with two Kampon geared steam turbines that used triple reduction with linked high-, medium-, and low-pressure turbines. The exhaust steam from the previous turbine spun the next one in the series. They were coupled to reduction gears which were connected to two propeller shafts.

The engines installed in Fubuki- and Asashio-class destroyers each generated 25,000shp, for a total of 50,000shp on the two shafts. The Kagero-class ships boasted uprated Kampon geared steam turbines that each generated 26,000shp. The turbines in the Fubuki- and Asashio-class destroyers could be configured to allow a 5,000-nautical mile cruising range

at 15 knots. The engines in the Kagero-class ships could achieve a range of 6,000 nautical miles at 18 knots when in cruising mode.

The turbines in Fubuki- and Asashio-class destroyers were fed by four heavy oil-fired boilers, while the Kagero-class ships had three boilers which heated steam to 370psi (26kg/cm³) at 350°C – US Navy destroyers, in contrast, used steam superheated to 600psi (41kg/cm³) at 454°C. Exhaust gases were routed up individual funnels, one for each fireroom.



This detailed artwork of an Asashio-class destroyer was one of a number of drawings of Axis warships created by the US Office of Naval Intelligence (ONI) for inclusion in its regularly updated recognition identification manual that was supplied to crews of all vessels and aircrew serving in operational units. The drawing was published in April 1943, just weeks after two Asashio-class destroyers had been sunk during the Battle of the Bismarck Sea. (Naval History and Heritage Command)

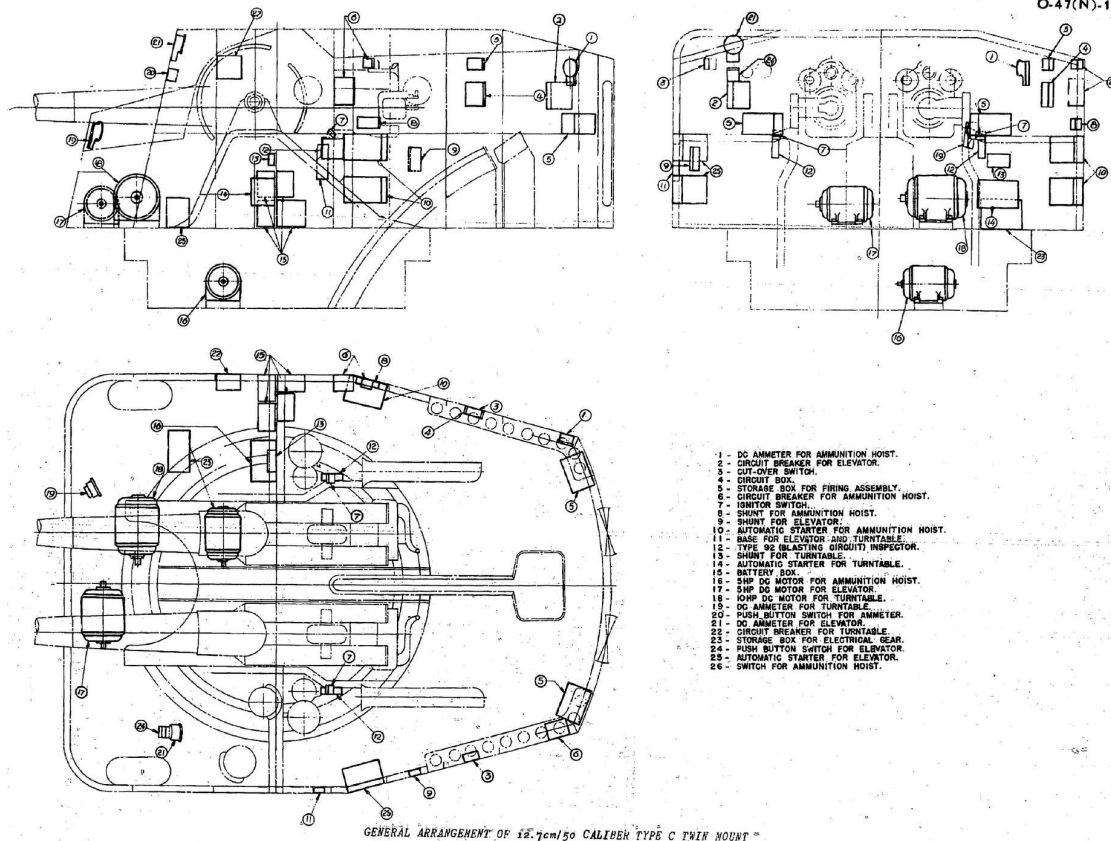
The IJN destroyers housed this machinery in two boiler rooms and two engine rooms. The boiler rooms were ahead of the engines rooms within the ship's hull. The forward room contained two boilers, while the after room contained two boilers in Fubuki- and Asashio-class destroyers and one boiler in Kagero-class ships. The boilers could feed either engine, and when cruising, just one was used, running the cruising turbines in both steam engines. Although the boilers and turbines were not as advanced as their

counterparts in US Navy destroyers, they were nevertheless an efficient arrangement.

Performance Specifications			
	Fubuki-class	Asashio-class	Kagero-class
Engines	two Kampon geared turbines	two Kampon geared turbines	two Kampon geared turbines
Boilers	4	3	3
Horsepower	50,000shp (37,000kW)	50,000shp (37,285kW)	52,000shp (39,000kW)
Maximum speed	34 knots (after rebuild)	35 knots	35.5 knots
Range	5,000 nautical miles (15 knots)	5,700 nautical miles (15 knots)	6,000 nautical miles (18 knots)

WEAPONRY

IJN destroyers had three primary anti-aircraft weapons, namely the Type 3 127mm 50-cal. gun, the Type 96 Model 1 25mm 60-cal. cannon, and the Type 93 Model 1933 13mm 0.52-cal. machine gun. Caliber in this context refers to the ratio of the bore to the length of the barrel, with a 60-cal. 25mm gun having a barrel 1.5m in length – 60 times longer than the weapon's 25mm bore. Only the Type 96 was an effective anti-aircraft weapon.



One remarkable innovation appearing with the advent of the Fubuki-class destroyer was its enclosed turret for two 127mm guns. The Type C turret (general arrangement drawings for which are shown here) used by Asashio- and Kagero-class destroyers could only elevate its guns up to an angle of 55 degrees. (Author's Collection)

The Type 3 127mm gun was designed in 1926 as part of the initiative which resulted in the creation of the Fubuki-class destroyer. It entered service in 1928 aboard the name ship in this class, and subsequently became a feature of all IJN destroyer designs through the start of the Pacific War. Each gun weighed 4,245kg, were of built-up construction, and had Welin breech blocks. The projectile was loaded first, followed by a cloth propellant bag.

This yielded a muzzle velocity 20 percent and a kinetic energy nearly 50 percent greater than that of contemporary US Navy 5in./38 destroyer guns. Conversely, this configuration suffered from a slow rate of fire. The American gun could achieve a rate of fire of 15 to 22 rounds per minute. The Type 3, however, could only fire five to ten rounds per minute. Not only did the projectile and charge have to be loaded individually, they had to be rammed manually. Furthermore, the gun could not be loaded if elevated more than ten degrees.

The Type 3 was viewed as a dual-purpose weapon, and the common high explosive round fired by the gun could be time-fuzed for antiaircraft defense. The effective burst radius of the 23kg projectile against aircraft was approximately 19m.

The Fubuki-class destroyers had Type A turrets that could elevate their weapons up to an angle of 40 degrees, while the Asashio-class and Kagero-class were equipped with Type C mounts whose guns could be elevated to 55 degrees. A Type B mount, with guns that had an elevation of up to 75 degrees, was also developed.

The Type 3's effectiveness against aircraft was diminished by several factors. The gun had a slow elevation rate of between six and 12 degrees per second. At firing angles greater than ten degrees, the gun had to be lowered to ten degrees to allow it to be reloaded, then re-elevated. The turrets could only train horizontally at six degrees per second, making it difficult to track a fast-moving aircraft. The guns lacked a centralized antiaircraft fire control, being fired individually. These issues, combined with the Type 3's slow rate of fire, meant that hitting an aircraft was more by luck than intention.

The Type 96 25mm weapon was a locally built variant of the French Hotchkiss cannon of the same caliber. Entering service with the IJN in 1936, it had a cyclic rate of fire of 220 to 260 rounds per minute, although the magazines for the cannon held only 15 rounds each. The need for frequent changes meant its effective maximum rate of fire was only 120 rounds per minute. Each round weighed 680g, with the projectile weight ranging from 240g (common or incendiary common rounds) to 260g (armor piercing). The common and incendiary common rounds had a 10g bursting charge. Tracer and armor piecing rounds were solid.

TYPE 93 MODEL 1933 13mm 0.52-cal. MACHINE GUN

The IJN mounted two types of light antiaircraft weapons on their destroyers in the form of the Type 96 Model 1 25mm 60-cal. cannon and the Type 93 Model 1933 13mm 0.52-cal. machine gun seen on the following spread. Both were simple, reliable, and rugged weapons. They were well suited to knocking down the aircraft of the early 1930s, when procurement began. In the years between the decision to purchase them and the start of the Pacific War, aircraft had grown in size and become faster. Slow canvas-and-wood biplanes had been replaced by fast aluminum monoplanes, which meant the

13mm machine gun lacked sufficient weight-of-fire to be an effective ship-mounted anti-aircraft weapon.

The gun's weaknesses were further amplified by the small number carried on board Japanese warships and the inadequate magazines for these mounts. The six destroyers at the Battle of the Bismarck Sea each carried only two 13mm (and two 25mm) guns, both single mounts. Their ammunition magazines were small. The 13mm had a 30-round magazine, while the 25mm used a 15-round magazine. Either gun could empty a full magazine in less than four seconds.

A strafing aircraft at attacking speed covered almost 3,300ft in ten seconds. Both Type 96 and Type 93 gun crews only had time to fire one magazine and load a second during this period – a well-practiced crew might also be able to fire part of the second magazine in that time. A strafing B-25 only faced 30 rounds of 25mm and 60 rounds of 13mm fire on an incoming pass, assuming all four guns were firing at the strafing aircraft.

IJN gun crews typically held their fire until the enemy aircraft was 2,600ft away in order to maximize hit percentages. That worked fine when the incoming aircraft had only a single 0.30-cal. nose gun. However, when it was armed with eight belt-fed 0.50-cal. machine guns that started firing 3,600ft out from the target, anti-aircraft battery crews were often cut down well before they had a chance to open fire.

The IJN increased the number of anti-aircraft guns carried by destroyers after the Battle of the Bismarck Sea, sometimes adding as many as 20 twin-mount 25mm guns. It did not change the basic equation, for crews were still forced to operate the weapons from unshielded, open mounts, and the strafing aircraft began firing well before the 25mm guns could. Japanese destroyers, and other light escort warships, remained vulnerable to B-25s for the rest of the war.

This artwork shows a Type 93 13mm machine gun being fired from on board an IJN destroyer during the Battle of the Bismarck Sea. Its gunner aimed through a simple ring-and-bead sight. Note the mounting offers little protection for its crew.





Twin-mount Type 96 Model 1 25mm 60-cal. cannon, such as the shore-based example seen here, were installed on IJN destroyers in an effort to increase antiaircraft capabilities. Only a single mounting was usually seen per vessel, however. Multiple triple 25mm gun mounts were added to cruisers and battleships. The Type 96 lacked the hitting power of the 37mm and 40mm antiaircraft guns used by other navies in World War II. (Author's Collection)

The Type 96 had a maximum antiaircraft ceiling of 5,500m, but was effective only up to 3,000m. The guns as mounted on IJN destroyers were manually trained and elevated. The Type 96 was effective against low-flying aircraft, especially the single-engined carrier-based types it had been developed to fight. It was less effective against multi-engined aircraft, and a single hit would not ensure a kill in the same way the US Navy's 40mm gun could. Several hits were often needed to bring down a B-25. As with the Type 3 gun, the Type 96 lacked central antiaircraft fire control, which meant the mounts fired individually without coordination, reducing the concentration of fire.

The Type 93 13mm machine gun was also based on a Hotchkiss weapon. Designed in 1933 and introduced into service in 1936, it replaced the earlier 7.7mm/94 "HI" machine guns that had previously been fitted to IJN warships. The Type 93 was a gas-operated, air-cooled weapon generally installed in manually operated single mounts on board destroyers. The Type

93 had a maximum rate of fire of 475 rounds per minute and an effective rate of 250 rounds per minute. It came with a 30-round magazine. Each round weighed 113 to 119g, of which 46 to 49.6g was the solid projectile. Although the Type 93 had an effective range of 1,500m, it was too light to be truly effective against combat aircraft – especially multi-engined bombers – in World War II.

Gun Specifications		
	Type 96 Model 1 25mm antiaircraft cannon	Type 93 Model 1933 13mm machine gun
Gun weight	115kg	42kg
Gun length	2.296m	1.41m
Barrel length	1.5m	1.2m
Rate of fire (rounds per minute)		
effective:	260	475
practical:	100	250
Projectile weight	680g	113–119g
Range against aircraft		
effective:	3,000m	2,000m
maximum:	1,000m	1,000m

The 610mm torpedoes aboard IJN destroyers were of no use when it came to defending vessels from aerial attack. They were, however, fearsome weapons when used against surface ships – the very reason for the Japanese destroyer’s existence. The Type 93 torpedo, introduced in 1933, was the famous “Long Lance” weapon. Fueled by a kerosene–oxygen mixture, it could travel 20,000m at 48–50 knots. The overall weight of the torpedo was 2,700kg, and it carried a 490kg warhead. The only relevance these weapons had in the Battle of the Bismarck Sea was their presence aboard the IJN destroyers. Each vessel carried 16 to 18 torpedoes, and they were filled with incendiary fuel and an explosive warhead.

Similarly, the ship’s stock of depth charges were useless against aircraft too, although they also contained explosives that could potentially be detonated in a strafing attack or by a bomb. The Type 95 depth charge had a

100kg charge (and a maximum depth setting of 200ft, making them almost as useless against US Navy submarines, which could dive to 500ft, as they were against aircraft), while the Type 97 had a 147kg charge.

Fubuki-class Destroyer Specifications	
Displacement	2,050 tons (as rebuilt – 1,750 tons when launched)
Dimensions	length 378ft (waterline), beam 34ft 1in., draft 10ft 6in.
Propulsion	two Kampon geared steam turbines (two shafts) and four boilers, creating 50,000shp overall
Speed	35 knots (after rebuild – 38 knots originally)
Range	5,000 nautical miles at 14 knots
Fuel	oil
Crew	219
Armament (1943)	six 127mm/50-cal. guns (three turrets), two 25mm/60-cal. cannon (one mounting), two 13mm machine guns (one mounting), nine 610mm torpedo tubes (three mountings) and 18 610mm Type 90 torpedoes, 18 Type 95/97 depth charges

THE STRATEGIC SITUATION

The Pacific is the world's largest and deepest ocean. Measuring more than 8,000 nautical miles from north to south and 10,000 nautical miles from east to west, with a surface area of 63 million square miles and an average depth of 13,000ft, it covers nearly a third of the world's surface. It should be large enough for the nations bordering it to peacefully coexist. In the 1930s, Japan disagreed.

The country's continental imperial ambitions embraced China. It swallowed Formosa in the late 19th century and absorbed both Korea and the Liaodong Peninsula in the first decade of the 20th century. In the wake of World War I, Japan assumed control of Germany's Chinese and Pacific possessions as part of the Treaty of Versailles that ended the conflict, gaining Pacific island holdings. In 1931, Japan annexed Manchuria. By the following year it was sparring with China in a conflict that eventually grew into the Second Sino-Japanese War in 1937.

Other nations, most notably Japan's World War I allies Great Britain and especially the United States, objected to its Chinese expansionism. The US government had long supported a China independent of European nations, and it expanded this position to include other Asian nations too, especially Japan. It exerted political influence to force a Japanese withdrawal, and when that failed, the Roosevelt administration imposed escalating economic sanctions from 1940. These culminated with an embargo being placed on oil exports to Japan in July 1941, triggering the invasion of southern French Indochina by the Imperial Japanese Army (IJA) shortly thereafter.

Japan long viewed the United States as its chief Pacific rival – an attitude that intensified after World War I ended. Although situated across the Pacific, the United States posed the chief economic and military threat to Japan. China was convulsed in internal disarray. The Soviet Union was still recovering from the Russian Revolution, which had left it unable to project power beyond the Asian mainland. Britain, while still possessing a global empire, had lost economic and military primacy following World War I.



Victorious IJA troops in China during the early stages of the Second Sino-Japanese War, which commenced in July 1937 and continued until September 1945. Japan's aggression in China put it on a collision course with the United States, which had long supported a China independent of foreign nations. (Author's Collection)

Although the US Army was miniscule compared to the IJA, from 1920 the US Navy was numerically superior to the IJN. The United States also had the world's largest economy and industrial base. World War I demonstrated the United States was capable of quickly multiplying the size of both its army and navy using its unrivalled industrial might.

Japan knew it could not beat the United States in a long war. Eventually, the latter's greater industrial capacity would prevail. Japan's economy, smaller than that of the United States, also lacked domestic access to all the strategic resources needed to run it. Although imports from the United States made things easier, Japan could meet its needs for coal and iron from domestic resources and those in Manchukuo (Japanese-occupied Manchuria). Japan, however, lacked sufficient domestically produced petroleum, rubber and food to meet either its civilian or military needs. This meant that petroleum had to be imported from either the United States or the Dutch East

Indies, rubber from the Dutch East Indies or British-held Burma, and food from Indochina.

The US embargos which followed the start of the Second Sino-Japanese War threatened Japan's economy. A restriction on the imports of iron, steel, heavy machinery and parts used in the production of military hardware and supplies was inconvenient to Japan. However, the oil embargo implemented in July 1941 threatened to shut down the country's civilian economy and cripple its armed forces. To break the embargo, Japan decided to conquer and control the territory it needed to meet the nation's needs for oil, fuel, and food. To retain it, Japan would build a defensive perimeter capable of protecting its newly acquired resources, and to defy its opponents' efforts to retake Japan's conquests.

Japan had built a navy it believed capable of keeping the United States out of the western half of the Pacific. This fleet was optimized to fight other warships across long distances. The ships were designed with outstanding surface warfare capabilities, and they also possessed the seakeeping abilities and range to operate in the wide expanse of the Pacific Ocean. Japanese warships tended to be larger, faster and more heavily armed than their US and British counterparts. Japan achieved this by ignoring treaty obligations, lying about the ships' size and armament while a signatory to naval limitations treaties, and, finally, withdrawing from naval limitations treaties at its earliest opportunity.

Japan counted on the ongoing war in Europe to give it a freer hand in the Pacific and Asia. France and the Netherlands had been conquered by Germany in 1940, making it difficult for these nations to defend their colonial possessions – France's Axis-allied Vichy government permitted Japan to occupy French Indochina in 1941. Britain was engaged in a life-and-death struggle to defend its home islands, and had drawn most of Australia's military to Europe and Africa. Only the United States had uncommitted resources, which were on the far side of the Pacific.

To keep enemy forces from interfering with those resources once they were in Japanese hands, Japan planned a defensive perimeter running in an arc from Burma, along the southern islands of the Dutch East Indies, New Guinea north of the Owen Stanley Range, New Britain and New Ireland, and through the coral atolls of the Central Pacific. It would capture this perimeter during its initial offensives. Once secured, it would be fortified. Japanese

forces would wait within it until their enemies had worn themselves out attacking the perimeter, at which point Japan could negotiate a favorable peace.

The initial offensives by both the IJA and the IJN succeeded far beyond their expectations. Instead of establishing and fortifying a defensive perimeter along that line, victory encouraged them to expand the perimeter. The planned expansion would include the Solomon Islands, the Aleutians, Midway and the southern half of New Guinea. Japan briefly even considered invading Australia. Instead of waiting for the Allies to tire of attacking a fortified defensive perimeter, Japan would keep pushing the enemy back until it sued for peace.

However, by the late winter of 1942–43, the Japanese tide, which had waxed strongly in early 1942, seemed to be on the wane. Expansion, checked at the Battle of the Coral Sea in May 1942 and at Midway the following month, was being rolled back as the year ended. The Allies had also finally wrested Guadalcanal, in the Solomon Islands, away from the Japanese. In New Guinea, the IJA was on the retreat, its attempt to take Port Moresby, on New Guinea's south coast, via the Owen Stanley Range having been repulsed.

Compounding Japan's problems, the Allies had now launched an offensive in the Papuan Peninsula – the southeastern “tail” of “bird-shaped” New Guinea. In the fall of 1942, Allied troops had beaten the IJN's Special Naval Landing Forces to Milne Bay at the tip of the “tail,” north of the Owen Stanley Range. They then drove up the Peninsula and established an airfield on the Dobodura plains, after which troops captured the heavily defended Japanese port at Buna on January 23, 1943.



Salamaua (seen here during an air raid by Fifth Air Force B-24s) in New Guinea was the Allies next target after taking Buna on January 23, 1943. In order to stop this, the IJA needed reinforcements shipped in from Rabaul. (Author's Collection)

Northern New Guinea remained the keystone of Japan's outer defensive perimeter. If it fell, the oilfields and rubber plantations in the Dutch East Indies would be exposed to attack by Allied heavy bombers. The Philippines would also be at risk of reoccupation by the Allies, which, in turn, would isolate the Japanese Home Islands from vitally important East Indies oil and rubber, and rice from Indochina. New Guinea had to be held.

The Japanese port stronghold at Salamaua, further up the New Guinea coast, was the next Allied objective. Inland, on the plains north of the Owen

Stanley Range, lay Allied-held Wau. Its location made it a threat to Salamaua, offering an overland route for the Allies to take the port. If Salamaua fell, Japanese bases at Lae and Finschhafen would be threatened. Lae was Japan's administrative headquarters in New Guinea. In Allied hands, Lae's airfields and port facilities could then be turned against Japanese forces in New Britain.

Japan's solution was simple. Capture Wau, which had hitherto been ignored. This would force the American–Australian allies back across the Owen Stanley Range. Any offensive launched against Salamaua would instead have to drive up the New Guinea coast, complicating Allied supply efforts. Japanese-held airfields in eastern New Britain allowed the Imperial Japanese Naval Air Force (IJNAF) to interdict Allied shipping along the northern New Guinea coastline. Furthermore, between Buna and Salamaua lay defended positions in both Morobe and Mort Bay, ensuring any drive up the coast would be a slow and bloody affair for the Allies.

Capturing Wau would have been simple prior to the fall of Buna, for the Australian troops holding the town were too small in number to withstand an IJA ground offensive. However, the capture of Buna freed up Allied forces to reinforce Wau, with troops being flown into the town's airstrip by transport aircraft.

Japan responded to these setbacks by moving some of the excess troops in Rabaul (originally placed there for the possible invasion of Australia) to New Guinea via troop convoy. Although it successfully transferred 4,000 soldiers, including the 102nd Infantry Regiment, to New Guinea in January 1943, the Allied reinforcement of Wau by air meant that the town was held following a week-long battle. More troops would be needed if the IJA was to prevail.

USAAF B-25s had also succeeded in damaging a transport that then had to be beached a Lae. Nevertheless, the troops got ashore, including three-quarters of those aboard the ship that was sunk and all of those in the vessel that was beached. This was an acceptable loss rate, and a new convoy was planned. This one would carry nearly 7,000 troops, along with supplies for the Lae garrison. It was a risk, but the Japanese believed it an acceptable one.

The Allies knew a new convoy was coming. Signal intelligence provided warning of its formation, including rough size and composition. Intelligence permitted the Allies to begin searching for the convoy along potential approach routes. It also prompted preparation for a maximum strength aerial offensive against the convoy so as to prevent the reinforcements from reaching New Guinea.



This photograph showing Rabaul and Simpson Harbor in late September 1942 was taken from a G4M1 "Betty" bomber of Misawa Kokutai. The harbor is crowded with vessels that were being used to resupply Japanese-held territory in New Guinea and the Solomons.
(Michael J. Claringbould Collection)

THE COMBATANTS

The Battle of the Bismarck Sea and the subsequent clashes between aircraft, especially B-25s, and IJN destroyers and escort ships, pitted two fundamentally different types of men against each other. The USAAF flyers (indeed most of the Allied air forces, including the RAAF and Royal New Zealand Air Force, as well as Naval Aviators of the US Navy and US Marine Corps) were largely amateurs. There was a leavening of pre-war regulars, but most aircrew had joined either immediately before or after the United States had entered World War II. They were new to their service, to flying, and to combat.

In contrast, the crews manning their destroyers were professionals. The officers were all graduates of the IJN's Naval Academy at Etajima. The most promising officers were funneled into warships, especially destroyers. While there were conscripts among the enlisted crew, the majority were volunteers, especially the petty officers providing enlisted leadership. They were well-trained, and had years of experience. While the quality of Japanese naval officers and crew would fall off due to increasing attrition as the war continued, in March 1943 the quality of those on board IJN destroyers was probably at its apex. Hard training had been honed by 16 months of combat experience.

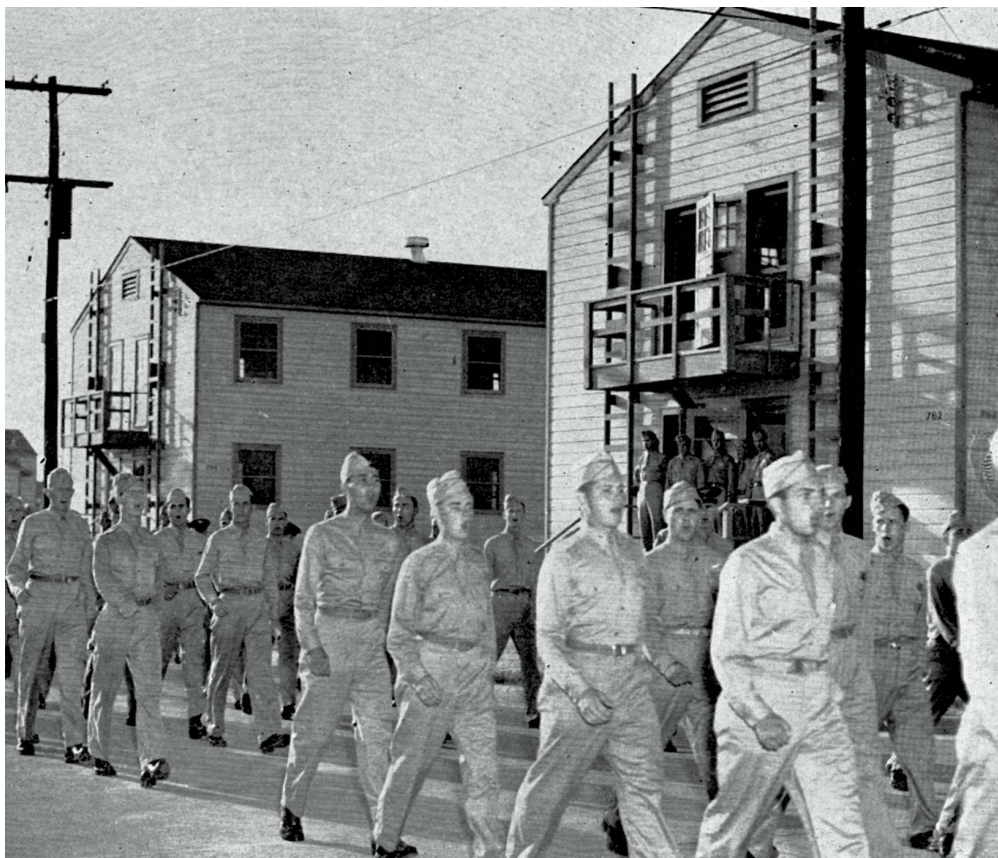
In this case, the amateurs prevailed over the professionals – an atypical result when combat involves complex hardware, such as military aircraft and destroyers. Victory normally goes to those most proficient with their tools, and the Japanese were both highly familiar and proficient with destroyers. Nor was the cause the difference in weapons systems – an inherent superiority of aircraft over surface ships. Allied medium bombers and multi-engined aircraft had been attacking IJN warships since December 1941, with mediocre results up until March 1943.

Rather, the abrupt change in fortunes after the Battle of the Bismarck Sea was due to Allied adaptability and flexibility coupled with Japanese short-sightedness and rigidity. The Allies, dissatisfied with their aircrafts' combat performance, experimented with new weapons systems and tactics to improve them. Curiosity and innovation were built into their society. The

IJN, despite knowing the risks aircraft posed to its ships, failed to improve their anti-aircraft defenses. Existing capabilities were adequate to meet early war needs. Instead, it focused attention on what the IJN perceived as the main mission of its destroyers: fighting other surface ships. It was a limitation built in by training and culture.

USAAF CREWS

All Allied combatants in the Battle of the Bismarck Sea were aircrew. Those flying the Mitchell with the USAAF had volunteered for flight status. They were selected based on physical excellence, high intelligence, and mechanical aptitude. Aircrew considered themselves among the best fighting men the United States had to offer, and this was a generally accurate judgement.



USAAF aviation cadets march past a barracks at Ellington Field in Texas. All officer candidates went through rudimentary basic training before progressing to an advanced school, where they were instructed in how to be pilots, bombardiers, or navigators. (Author's Collection)

Most were reservists, and those who had joined immediately before and directly after the United States' entry into World War II. On June 30, 1938, the USAAC's manpower consisted of just 20,196 personnel. By 1944, the USAAF (as the USAAC had become in March 1942) had grown to nearly 2.4 million officers and enlisted personnel. By then it had trained 103,482 officers as pilots, 21,462 as navigators, and 7,387 as bombardiers. Most of those aboard the Fifth Air Force's Mitchells in March 1943 numbered among those men who had joined up in the immediate aftermath of the attack on Pearl Harbor.

Despite rapid expansion, the USAAF maintained high standards for aircrew. In 1941, applicants for aviation cadet training – which led to an officer's commission – had to be between 20 and 26 years old and have completed at least two years of college. Enlisted applicants to the USAAF were between 18 and 30 years of age and had at least an eighth-grade education. Volunteers were screened for aptitude and assigned to appropriate training. Those not meeting USAAF standards would not be accepted as aircrew.

Aircrew candidates could be no taller than 5ft 10in. tall and weigh no more than 170lb. They also had to be physically fit, have 20/20 eyesight and good hearing. Physical qualifications for admission were successively modified; the age limit was raised to 35 years, height to 6ft 0in., and weight to 180lbs. Requirements could be waived for a candidate with prior aviation experience, especially early in the war.

Upon entry to the USAAF, the recruit went through basic training. Officer candidates typically did this as part of a college program. There, they would go through Reserve Officer Training Corps training and preflight ground schools.



B-25 pilots flew multi-engine trainers as part of advanced flight training. Here, cadets and their instructors (who lack parachutes) walk to their Curtiss-Wright AT-9 Jeep advanced twin-engine trainers at the start of a day's flying under instruction. Almost 800 AT-9s and re-engined AT-9As were built exclusively for the USAAF in 1941–43, the Jeep being designed as a “high-performance” aircraft that replicated the takeoff and landing characteristics of the new generation of high-performance, multi-engine aircraft (including the B-25) then entering service with the USAAF. (Author's Collection)

Enlisted personnel would go to a Basic Training Center (BTC). From 1940 through to 1943, they went through four weeks of training with 192 hours of instruction, the bulk of which was the School of the Soldier: physical training, squad drill, platoon drill, company drill, marching and ceremonies, and field marches. No marksmanship or small arms training was given. BTC increased to an eight-week course, with ground combat skills added from mid-1943. All enlisted men went through BTC prior to being sent to technical schools for specialized training, including personnel chosen for flight training.

The B-25 had a crew of four to six men. There were up to eight different roles required to fight in a B-25: aircraft commander (pilot), co-pilot, bombardier, navigator, radio operator, flight engineer, aerial gunner, and cannoneer. With more jobs to be done than crew aboard the aircraft, some did double duty. The most common were bombardier/navigator, radio-operator/navigator, gunner/radio operator or gunner/flight engineer. Not all

roles were filled on all aircraft. The flight engineer was removed after the B-25B, only to reappear in the B-25H. Similarly, some aircraft flew without bombardiers or co-pilots. Regardless, all positions required specialized training.

Those chosen to be pilots went through three stages of flight training: primary, basic, and advanced training. In primary training, students learned to fly a low-horsepower small aircraft. Much of this training was offered in civilian schools, often in conjunction with college if the pilot trainees were participating in an education program. Basic flight training transitioned trainees to a heavier aircraft with more complex controls. In advanced training they learned to fly a still more powerful machine that approximated the characteristics of combat aircraft. For pilots intended for bomber aircraft, this would be done on multi-engined trainers such as the Beechcraft AT-10 or Cessna AT-17.

Upon graduation from advanced training, students received their wings and were commissioned as second lieutenants. It typically took 70 to 75 flight hours to earn pilot's wings.

From there, new pilots were given specialized instruction suited to their military assignments. This included a period of transition flying with the aircraft they would take into combat – the last stage of a pilot's individual training. He then started training as a member of an aircrew within an operational unit. Pilots did not just learn to fly during training. They also learned basic navigation, radio communications, and aerial gunnery. Most USAAF pilots were assigned single-crew, single-engined aircraft. Those pilots were their own radio operator and navigator.

The USAAC began specialized navigation training in 1933. By 1939 it was sending would-be navigators to a school run by Pan American Airlines in Coral Gables, Florida. USAAC navigation schools were established from November 1940. Thereafter, navigator candidates went through a 15-week navigation school that trained them in dead reckoning, celestial navigation, pilotage (navigating by compass heading), and radio navigation. This involved 500 hours of ground and 100 hours of flight instruction. They were commissioned after finishing flexible gunnery school, or upon graduation from navigation training if gunnery school openings were unavailable.

Prior to July 1941, when specialized bombardier training commenced, all such tuition was conducted on-the-job in operational units. Through to the

middle of 1943, students undertook a 12-week course. This was lengthened to 18 weeks thereafter. Upon completion of flexible gunnery school, they became commissioned officers. Shortages of trained bombardiers led many bomber units to complete crews with enlisted bombardiers. These men, selected from the units' available aircrew, went through individual bombardier training during aircrew and combat unit training.

Enlisted flight crew serving as flight engineers or radio operators also went through specialized training schools. Radio operators undertook a six-month course that involved 720 hours of instruction on use and operation of aircraft radios. Flight engineers were not used on B-25s, except for early versions. They too went through specialized training. Upon finishing their technical training they attended a flexible gunnery course.



All flight crew except pilots completed six weeks of tuition at flexible gunnery school. Here, students practice field-stripping a 0.50-cal. machine gun. (Author's Collection)

Navigators, bombardiers, and all enlisted flight crew went through a six-week flexible gunnery course. Some enlisted flight crew had no other specialty – they were “career gunners.” In the B-25, career gunners manned the dorsal turret in early versions, and the waist and tail guns in late models. Career gunners were given priority for gunnery schools, as shortages in the latter existed through to June 1944. In addition to training in the maintenance and operation of the 0.50-cal. machine gun, ground firing and aerial firing training was given, including specialized training on specific types of power turrets.

While the crews flying B-25s arrived in the Pacific Theater with little more than individual and combat unit training, they were highly motivated and aggressive. Green crews soon became veterans following the experience of combat.

IJN CREWMEN

The IJN’s destroyer force constituted an elite. Japan had a tradition of aggressive use of destroyers that dated to at least the Russo-Japanese War of 1904–05, and could be traced back even further to their torpedo boat operations during the First Sino-Japanese War in 1894–95. The motto of the destroyer service was “nikuhaku-hitchu” (press closely, strike home).

IJN destroyers carried crews of between 120 and 265 officers and men. The eight destroyers at the Battle of the Bismarck Sea were manned by between 219 and 239 personnel. In early 1943, Japanese destroyers were crewed by experienced and highly professional officers and men, among the most capable in the IJN.

The IJN trained hard and fought hard. Established in 1868, within 20 years it had established a tradition that stressed the importance of training and the promotion of officers and men based on their competence and ability to lead. This combination led the IJN to victory in the Russo-Japanese War, and remained at the heart of the service throughout the Pacific War.

MAJOR PAUL IRVIN “PAPPY” GUNN

Paul Irvin Gunn was born in Quitman, Arkansas, on October 18, 1900 – biographies often list his birth year as 1899, Gunn having backdated his birthday a year so that he was old enough to join the US Navy in 1917. He was the eighth of nine children of Nathaniel and Laura Gunn. His father, a farmer and livestock dealer, died when Paul was seven. His mother ran the farm thereafter, with the aid of her four youngest children and hired help.

Gunn first saw an aircraft in 1910, after which he resolved to become a pilot. Upon the US entering World War I, he enlisted in the US Navy. Despite a sixth-grade education, he joined the US Naval Air Service, serving as an enlisted aviation mechanic. He remained in the US Navy post-war. Taking civilian flying lessons, Gunn gained his private pilot's licence in 1922 and subsequently bought a Curtiss flying boat. He met and married Clara Louise Crosby in 1923 and reenlisted the following year when offered the opportunity to become a Naval Aviator in the US Navy. Gunn duly earned his wings of gold in 1925.

Flying fighters with VF-1B "Tophatters" and serving as a flight instructor at Naval Air Station Pensacola, Florida, were highlights in Gunn's US Navy career, which ended with his retirement as a chief petty officer in 1937. Having started a chartered flying service in Hawaii, Gunn was recruited in 1939 by Manila-based Andrés Soriano to fly his five-strong fleet of twin-engined Beechcraft aircraft. Having moved to the Philippines with his family, Gunn soon persuaded Soriano to finance the creation of Philippine Air Lines, which the veteran aviator ran.

When the Philippines were attacked by the Japanese on December 8, 1941, the USAAC took over Philippine Air Lines. Gunn was commissioned as a captain in the US Army and told to run the USAAC's Philippine Air Transport Service. On December 25, 1941 Gunn was ordered to evacuate Allied personnel, flying one of his Beechcraft to Darwin with five passengers. He was forced to leave his family behind in Manila, and they remained internees until the Philippines was liberated three years later.

Once in Australia, Gunn was assigned to the Fifth Air Force. By

then in his early forties, and a generation older than most other pilots serving with him, he became known as “Pappy.” The mechanical skills he had acquired as a Naval Aviator and during the running of Philippine Air Lines were put to good use when Lt Gen George Kenney made Gunn the Fifth Air Force’s “special projects officer.” Best known for developing “gun” or “strafer” A-20s and B-25s, he also devised many other weapons-related innovations, including parachute-retarded fragmentation bombs (“parafrags”) and the installation of a modified 75mm howitzer in the Mitchell.

Assigned to NAA to oversee its production of gun-equipped B-25s following the Battle of the Bismarck Sea, Gunn returned to the Pacific after the Allied invasion of the Philippines in October 1944. Badly wounded at Leyte during a Japanese raid on Tacloban airfield shortly thereafter, he was evacuated to Australia to convalesce. He was subsequently joined there by his family after their internment camp was liberated.

Gunn retired from the US Air Force in 1948 on medical disability as a full colonel. He returned to the Philippines, reestablishing Philippine Air Lines and serving in both management and as a pilot. On the evening of October 11, 1957, during a local charter flight, Gunn and his passengers were killed when their Beech 18 crashed in the central Philippines while trying to avoid a tropical thunderstorm.



Maj Paul "Pappy" Gunn was the man who developed the "strafer" A-20 and B-25.
(USAF)

All IJN officers were volunteers. Entry started at Japan's Naval Academy at Etajima, with applicants applying to become line officers between the ages of 16 and 19. By the 1930s birth helped, but only in the sense that someone from a navy family, or otherwise well-connected, was more likely to be accepted than an outsider. Regardless of whom their family was, to be accepted, applicants had to pass a physical examination and a competitive academic test. Only the top 15 percent were accepted into Etajima.



Sailors on board an IJN destroyer man the rails during a naval review prior to the start of the Pacific War. Such men were deemed to be part of an elite force within the IJN. The vessel in the distance is almost certainly a Minekaze-class destroyer. (Library of Congress, Washington, D.C.)

Line officer cadets attended three years of classes, before spending a final year aboard a training ship. Engineering cadets completed a four-year course that included a stint at the engineering academy at Yokosuka. Both had to pass an examination to receive a commission. They could retake a failed examination within six months. A second failure eliminated them.

Officers could be promoted from the lowest commissioned rank to the equivalent of lieutenant commander after eight years' service. Subsequent promotion was based on performance through board reviews. Officers

experienced “up-or-out” promotions, with a lieutenant having to retire at 42 if not promoted.

Sailors that manned IJN warships were drawn from Japan’s lower classes, often having previously been employed as farmers, laborers and factory workers. All men were subject to conscription at the age of 20, and if ordered into the IJN, service would last three years prior to being discharged. Recruits could also volunteer to serve a five-year term if they were between the ages of 17 and 21. All potential sailors had to pass a physical examination, and demonstrate literacy and competence in basic mathematics.

Both conscripts and volunteers could remain in the IJN upon the completion of their specified period of service. Many did, serving until retirement age. They could also be promoted to the rank of petty officer or warrant officer aboard a ship. However, sailors, regardless of rank, were ineligible for officer commissions, and petty and warrant officers did not stand watches. Sailors were pensioned off at the age of 40. Petty officers could remain in the IJN until 45, with warrant and senior warrant officers retiring at 50 and 55, respectively.

In its formative years, the IJN modeled itself on the Royal Navy. As with the latter service, the IJN historically avoided conscription during peacetime, and used it as little as possible during wartime. Even during previous wars, there were relatively few conscripts because most manpower needs were filled by volunteers. Most volunteers came from Hokkaido and northern Honshu – areas with short growing seasons and low fertility. Young Japanese viewed the IJN as a means of obtaining technical skills, seeing it as an escape from life on a small farm, and the poverty it entailed.

After Japan withdrew from the Washington and London treaties, the IJN began growing explosively. Between 1928 and 1935, it grew from 80,595 officers and men to 97,986. This was manageable, with growth under 20 percent of its total strength and an annual average of 2.2 percent. However, between 1936 and 1941 it went from 107,547 to 311,359 – an increase of nearly 300 percent. A further 110,000 personnel had been added by the end of 1942.

This growth forced the IJN to increasingly rely on conscription to the point where, at the start of the Pacific War, 70 percent of its ratings and non-commissioned officers were conscripted and only 30 percent volunteers. This actually went down in 1942 to a 50–50 split as men volunteered for the IJN in

preference to being drafted into the IJA. Conscription filled the ranks, but not necessarily with men the IJN most desired. The IJA administered all conscription, and following the start of the Second Sino-Japanese War in 1937 the army ensured its needs were met before releasing men to the IJN. What conscripts the latter received were of inferior quality to those that had previously served.



IJN destroyer crews took pride in their service. This included posing for a studio photograph in their shore-going best to send to their family and maybe a sweetheart back home. (Author's Collection)

Another problem naval expansion brought was a shortage of officers. Prior to the pre-war build-up, officers were admitted on the basis that everyone receiving a commission would be able to retire as a captain. Thus, academy class sizes were kept small through the 1920s and early 1930s. Even after the expansion began, the increase in class sizes was based on the number of

officers needed when the ships then under construction were commissioned, without making allowances for the numbers needed in ten years' time, after the build-up was completed. By 1941, there was a shortage of more than 1,100 officers.

This gap could not be easily filled because Japan's reserve officer program was tiny, with most graduates coming from the Maritime Academy and Merchant Marine School. When the war started, these men were needed to run Japan's merchant fleet.

The gap was particularly acute for mid-level officers – the lieutenant commanders and commanders. Wartime casualties aggravated the problem. Junior officers were easily found by accelerating training, but those with experience to command were so hard to find that by 1943 inexperienced and unqualified officers were being pushed into those positions. This probably affected the destroyers less than it did other parts of the IJN, as qualified commanders were usually found for such vessels, even if it meant leaving auxiliaries and shore positions to be manned by lesser candidates.

Life on board IJN warships, especially destroyers, was spartan. There were few amenities, and training was hard and continuous. Pre-war Japan carried out battle training under conditions as close to the real thing as possible. Maneuvers were conducted in waters distant from Japan, where they would not be observed. The stormy North Pacific was a particularly favored location. Training cruises would go on for a month under combat conditions, meaning no weekend breaks, no rest and little sleep during simulated combat operations. One drill followed another, and included frequent live-fire exercises with torpedoes and gun batteries.

This ensured that when the Pacific War started, those destroyers already in commission were manned by skilled crews used to working together as a team. Although this meant they could effectively employ the weapons they had at their disposal, the competency of IJN destroyer crews was inconsequential by early 1943 because they lacked sufficient firepower for the tasks now being demanded of them.

REAR ADMIRAL MASATOMI KIMURA

Masatomi Kimura was typical of the long-service professional naval officers of the IJN, spending most of his career on board destroyers. He was one of Japan's outstanding naval commanders.

Kimura was born into the Kondo family on December 6, 1891 in Shizuoka, Japan. He was adopted by the Kimura family as an infant and grew up in Tottori prefecture, which he considered his home. Attending the IJN Naval Academy at Etajima, in Hiroshima, he graduated in its 41st class in December 1913, ranked 107 in a class of 188 students.

Kimura initially served aboard the armored cruiser *Asama* as a midshipman, before transferring to the armored cruiser *Yakumo*. Commissioned as an ensign in the IJN in December 1914, he completed both the Torpedo School and Gunnery School basic courses as a lieutenant junior grade in 1916–17 and was serving on board the battleship *Mikasa* when World War I ended. Kimura commanded a torpedo boat in 1920, before instructing at the Torpedo School through to 1922. As a lieutenant, he commanded three minelayers (two of which were former destroyers) between 1923 and 1926.

Promoted to lieutenant commander on December 1, 1926, Kimura spent the next 12 years – bar a short six-month spell on the staff of the Third Fleet and briefly commanding a Yangtze River gunboat – fulfilling seagoing commands on board Japanese destroyers. First commanding older, smaller vessels, he eventually took charge of the Fubuki-class destroyer *Asagiri*. Between 1934 and 1938, first as a full commander and later as a captain, Kimura led Destroyer Divisions 16, 21, and 8.

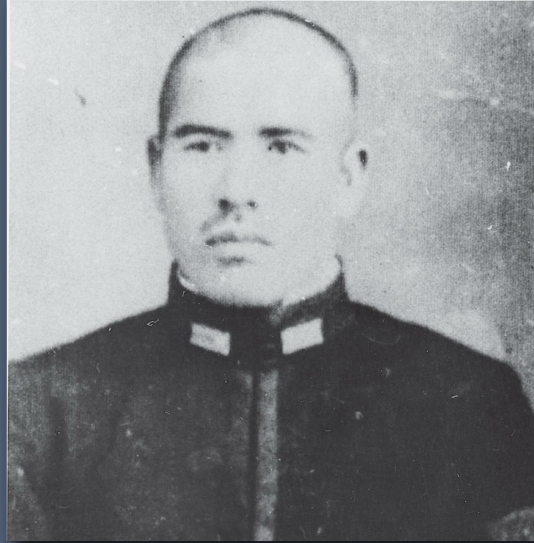
As a captain, he commanded four ships: the seaplane tender *Kagu Maru* (1939), fleet oiler *Shiretoko* (1939), light cruiser *Jintsu* (1939–40), and heavy cruiser *Suzuya* (1940–42). With the latter vessel, he participated in the invasion of the Dutch East Indies, the capture of the Andaman Islands, the Indian Ocean raid, the Battle of Midway, and the early actions in the Solomon Islands campaign. At Midway, *Suzuya* rescued survivors from its sister-

ship *Mikuma* after the heavy cruiser was sunk by carrier-based US Navy SBD Dauntless dive-bombers.

Promoted to rear admiral in November 1942, Kimura returned to destroyer duty with command of Destroyer Squadron 3 at Rabaul, and as overall commander of 8 Transport Fleet carrying the IJA's 51st Division from Rabaul to Lae. His flagship, *Shirayuki*, was sunk on March 3, 1943 during the Battle of the Bismarck Sea. Although Kimura was wounded in the shoulder and abdomen by machine gun fire, he was rescued by the destroyer *Shikinami*.

Recovering from his wounds, he was reassigned to Destroyer Squadron 1 in the Kuriles. Here, Kimura conducted a brilliant evacuation of Kiska, in the Aleutian Islands, in July 1943, defying orders to withdraw until the Japanese garrison had boarded the two light cruisers and ten destroyers committed to the rescue operation. He participated in the Battle of Leyte Gulf in October 1944, commanding the destroyers covering Vice Admiral Takeo Kurita's Central Force. Kimura also conducted a daring night attack on the American beachhead at Mindoro on December 26, 1944, his two cruisers and six destroyers bombarding San Jose for 20 minutes before escaping without loss.

He subsequently held shore positions for the rest of the war, including commanding the Antisubmarine Warfare School and the Hofu Naval Communications School. Promoted to vice admiral in November 1945, Kimura retired shortly thereafter. He had a post-war career in Japan's salt industry, prior to succumbing to stomach cancer on February 14, 1960.



Rear Admiral Masatomi Kimura commanded 8 Transport Fleet during the Battle of the Bismarck Sea. He was one of Japan's most talented destroyer officers. (Naval History and Heritage Command)

COMBAT

Lt Gen George Kenney ended 1942 frustrated about the performance of his bombers against Japanese ships at sea. Medium-level horizontal bombing had proven to be generally ineffective against moving vessels. Even large and slow transports had managed to evade most bombs dropped from altitudes above 5,000ft. Drop enough bombs on such a target and one or two might hit. Bombing agile and fast destroyers from those altitudes was hopeless.



Lt Gen George Kenney commanded the Fifth Air Force in New Guinea. A bombastic braggart, he was nevertheless a brilliant commander whose insights and imagination made the Fifth Air Force a deadly foe for the Japanese. (Author's Collection)

His aircraft needed to go lower. That exposed them to light antiaircraft fire, which had to be countered. Furthermore, using standard attack profiles that saw bombers approaching broadside to a ship required exquisite timing to score a hit. Typically, only one bomb would hit when multiple bombs were dropped. Kenney assigned the task of improving the ability of his medium and strike bombers to suppress antiaircraft fire to Maj Paul Gunn of the 90th BS/3rd BG, who developed a strafing version of the A-20 and B-25.

Meanwhile, Maj William Benn, commanding the B-17F-equipped 63rd BS/43rd BG, was also getting frustrated with his aircraft's inability to hit enemy warships. He began experimenting with a technique called skip bombing. He would fly a B-17 "on the deck" at a height of 200–250ft above the ocean. Approaching the target at high speed, the aircraft flew parallel to the ship and dropped its bombs as it approached. The weapons, armed with five-second time fuzes, hit the water and skipped like flat stones over its surface. They either skipped into the ship and exploded on impact, or sank in the water alongside the vessel, detonating next to the hull and "mining" it.



A-20A 40-173 *Strawberry Roan* of the 89th BS/3rd BG serves as a backdrop for pilots and groundcrew at Kila Drome, Port Moresby, in early 1943. Standing third from left in the back row, with a cigarette in his mouth, is 1Lt Charles Mayo, who flew several Havoc sorties during the Battle of the Bismarck Sea (none of them in this aircraft, however). 40-173 was ditched in

Bootless Bay near Port Moresby by 1Lt William Langley when its starboard engine failed during a test flight from Kila Drome on April 22, 1943. (Michael J. Claringbould Collection)

Alternatively, the ordnance could be held until the bomber was overhead the ship at mast-top height, at which point the bomb (fitted with a delayed action fuze so as to ensure the aircraft had enough time to avoid being engulfed in the subsequent blast) was dropped and penetrated deep into the ship before exploding. Either technique significantly increased the hit percentage, but also the risk of being struck by light antiaircraft fire.

Maj Benn demonstrated the technique's effectiveness in the B-17, even using it on combat missions. Kenney realized other aircraft in his inventory, especially Gunn's strafers A-20s and B-25s, were better suited to using skip and mast-top bombing attacks. Twin-engined aircraft were more agile than four-engined B-17s, and more expendable. Additionally, the nose guns in Havocs and Mitchells solved a major problem with low-level attacks.

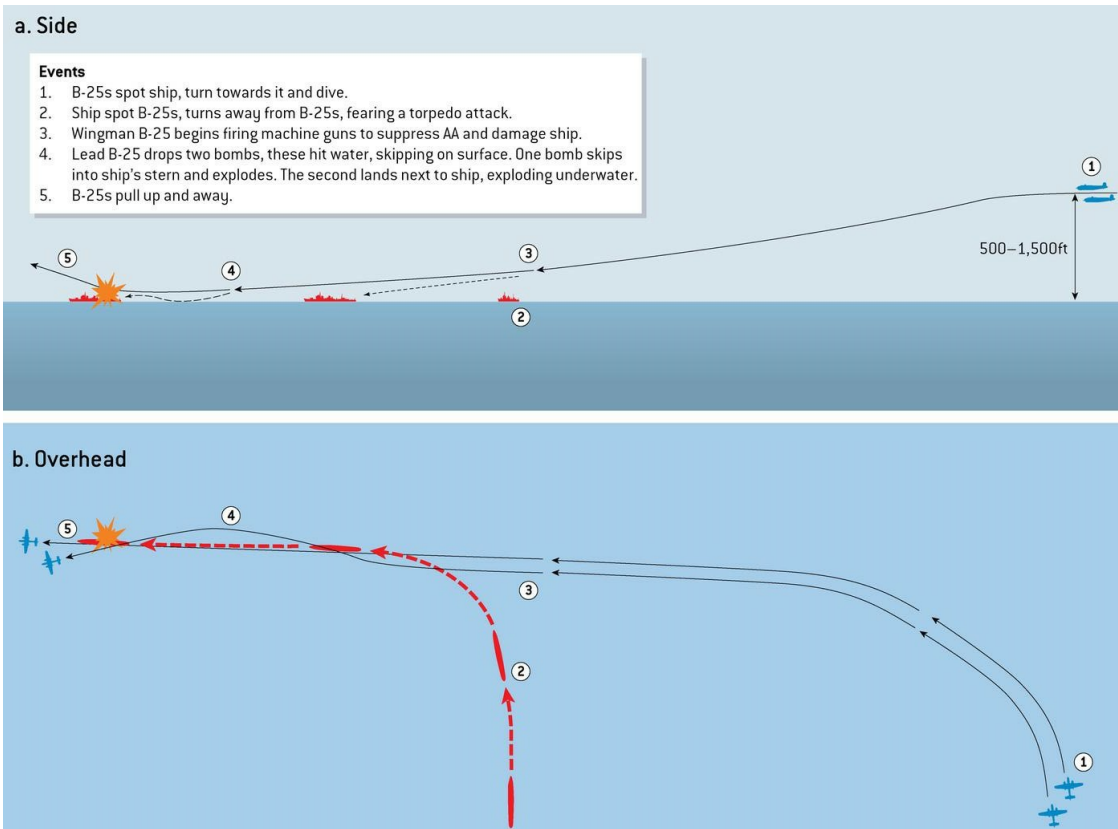


The wreck of SS *Pruth*, a 4,700-ton steamer that had run aground on Nateara Reef near Port Moresby in 1924, proved to be an ideal target for strafers-equipped A-20s of the 89th BS and skip and mast-top bombing B-25s of the 90th BS. No fewer than four Mitchells were lost in 1943 during practice attacks on the vessel. The RAAF also lost a Boston and a Beaufighter. (NARA)

Allied Order of Battle, Battle of the Bismarck Sea
Fifth Air Force (Lt Gen George C. Kenney commanding)
35th FG (Col R. A. Legg commanding)
39th FS (P-38 Lightning)

40th FS (P-39 Airacobra)
41st FS (P-39 Airacobra)
49th FG (Lt Col R. L. Morrissey commanding)
7th FS (P-40 Warhawk)
8th FS (P-40 Warhawk)
9th FS (P-38 Lightning)
3rd BG (Lt Col R. F. Strickland commanding)
13th BS (B-25 Mitchell)
89th BS (A-20 Havoc)
90th BS (B-25 Mitchell)
38th BG (Col F. R. Upthegrove commanding)
71st BS (B-25 Mitchell)
405th BS (B-25 Mitchell)
43rd BG (Col R. M. Ramey commanding)
63rd BS (B-17 Flying Fortress)
64th BS (B-17 Flying Fortress)
65th BS (B-17 Flying Fortress)
403rd BS (B-17 Flying Fortress)
90th BG (Col R. E. Koon commanding)
319th BS (B-24 Liberator)
320th BS (B-24 Liberator)
321st BS (B-24 Liberator)
400th BS (B-24 Liberator)

No. 9 Operational Group (Air Commodore J. E. Hewitt commanding)
No. 71 Wing (Wg Cdr I. D. McLachlan commanding)
No. 6 Sqn (Hudson)
No. 75 Sqn (Kittyhawk)
No. 77 Sqn (Kittyhawk)
No. 100 Sqn (Beaufort)
No. 73 Wing (Wg Cdr B. R. Pelly commanding)
No. 4 Sqn (Wirraway)
No. 22 Sqn (Boston)
No. 30 Sqn (Beaufighter)



Effective low-level tactics for medium bombers devised by the Fifth Air Force in late 1942 transformed the B-25 into a deadly “ship-killer.” Skip and mast-top bombing were similar, but the way the bombs were dropped differed. Although skip bombing was potentially more effective, mast-top bombing proved easier to master.

The heavy slugs fired by the 0.50-cal. machine guns cleared the ships’ decks of personnel, thus suppressing light antiaircraft fire. They also penetrated the decks and gun turrets of the IJN destroyers, wreaking havoc inside the vessels. While a Japanese destroyer’s 127mm guns were normally ineffective against aircraft flying at medium to high altitude, they were capable of knocking down a twin-engined bomber flying straight at the destroyer at low level. But these guns were silenced, along with the vessel’s more exposed light antiaircraft guns, by a well-executed strafing attack.

Kenney soon had aircraft from the 3rd BG, especially strafing-equipped A-20s of the 89th BS and B-25s of the 90th BS, practicing skip bombing against the wreck of SS *Pruth*, a 4,700-ton steamer that had run aground on Nateara Reef near Port Moresby during a storm in January 1924. While practicing, two aircraft were damaged by flying debris from bomb blasts, and a third crashed after colliding with the wreck’s mast. Hard practice was necessary to master both demanding techniques.

It paid off. By the end of February, pilots had become proficient. Often, they combined the techniques, skip bombing with the first two bombs dropped and using mast-top bombing for the final two, sometimes getting four hits with four bombs. In the end, most crews opted for mast-top bombing over skip bombing. It was easier to master, and the results were almost identical. Kenney only needed a suitable opportunity to field test his bombers.

ASSEMBLY AND DEPARTURE (FEBRUARY 28–MARCH 1)

Kenney’s opportunity to test the effectiveness of the new bombing tactics came as February ended. The IJN was assembling a convoy to carry additional troops to New Guinea in support of a new push to capture Wau. The muscle to dislodge the Australian force holding the town required more troops. This would come in the form of 6,000 soldiers of the IJA’s 51st

Division, reinforced by a 400-man Special Naval Landing Forces unit – IJN marines.



Lt Gen Hatazo Adachi commanded the IJA's 18th Army. He and his staff were on board the destroyer *Tokitsukaze* during the Battle of the Bismarck Sea. Having survived the sinking of the vessel, Adachi surrendered to Australian forces at war's end and was subsequently sentenced to imprisonment for life after being found guilty of war crimes. He committed suicide in the prisoners' compound at Rabaul on September 10, 1947. (Author's Collection)

A convoy was organized to take the troops from Rabaul to Lae. Most of the 51st Division, and their equipment, provisions, arms, and ammunition, were divided among six IJA troopships – *Aiyo Maru*, *Kyokusei Maru*, *Oigawa Maru*, *Shinai Maru*, *Taimei Maru*, and *Teiyo Maru*. A seventh transport, *Kembu Maru*, carried drummed aviation fuel for Lae's aircraft. The 400 marines and food for Japan's existing New Guinea garrison were embarked in "special service vessel" *Nojima*.

Destroyer Squadron 3 was tasked with escorting the transports. Operating out of Rabaul, these vessels had survived the long and bitter fighting for control of Guadalcanal. Veterans that had fought several battles in the waters around the island, they had escorted a number of convoys to Guadalcanal. The destroyers also carried the staff of the troops going to Lae, with 18th

Army commander Lt Gen Hatazo Adachi on board *Tokitsukaze* and Lt Gen Hidemitsu Nakano and the staff of the 51st Division embarked in sister-ship *Yukikaze*.

Japanese Order of Battle, Battle of the Bismarck Sea	
Lae Resupply Convoy (Rear Admiral Masatomi Kimura commanding)	
Escort (Rear Admiral Masatomi Kimura commanding)	
Fubuki-class destroyers <i>Shirayuki</i> * (White Snow), <i>Uranami</i> (Shore Wave), <i>Shikinami</i> (Spreading Waves)	
Asashio-class destroyers <i>Asashio</i> * (Morning Tide), <i>Arashio</i> * (Stormy Tide), <i>Asagumo</i> (Morning Cloud)	
Kagero-class destroyers <i>Tokitsukaze</i> * (Favorable Wind) and <i>Yukikaze</i> (Snowy Wind)	
Convoy (Capt Kametario Matsumoto commanding)	
<i>Aiyo Maru</i> * (2,746 tons, built 1942)	
<i>Kembu Maru</i> * (953 tons, built 1942)	
<i>Kyokusei Maru</i> * (5,493 tons, built 1920)	
<i>Oigawa Maru</i> * (6,493 tons, built 1941)	
<i>Shinai Maru</i> * (3,793 tons, built 1921)	
<i>Taimei Maru</i> * (2,883 tons, built 1936)	
<i>Teiyo Maru</i> * (6,869 tons, built 1924)	
<i>Nojima</i> * (4,500 tons, built 1919)	
(All transport tonnage is in gross register tons)	
* Sunk during battle	
IJA units aboard the convoy vessels:	

18th Army Headquarters
51st Division Headquarters and Signals
51st Engineering Regiment
14th Artillery Regiment
115th Infantry Regiment
3rd Field Hospital
21st Artillery Brigade
50th Anti-Aircraft Battalion
15th Independent Engineering Regiment
22nd Airfield Battalion
209th Airfield Battalion
4th Air Signals Regiment
8th Shipping Engineer Regiment
3rd Company, 5th Shipping Engineering Regiment
3rd Debarkation Unit
IJN ground units aboard the convoy vessels:
3rd Naval Air Defense Unit
Yokosuka 5th Special Naval Landing Party
Maizuru 2nd Special Naval Landing Party
(all embarked in <i>Nojima</i>)

The destroyers were combat-loaded, with plenty of small boats on board to aid unloading. Cargoes and troops were distributed so that if half the transports were lost en route, the surviving ships would still be able to deliver

a balanced force. Unloading at Lae was meticulously planned. It would go on throughout the night, with six hours deemed to be sufficient time to unload each ship.

Allied intelligence reported formation of the convoy, aerial reconnaissance having captured its assembly in Rabaul harbor. Attempts to attack the convoy there prior to its sailing were stymied by weather and Rabaul's formidable anti-aircraft defenses. The latter made low-level attacks too risky with conventional bombers. There were too few strafers, and only the B-25s could reach Rabaul.

Fifth Air Force planners decided to catch the convoy at sea. Three courses of action were quickly devised. If the convoy used the most direct route to Lae, it would be within range of Fifth Air Force heavy bombers the day after it left Rabaul, and all aircraft the following day. If the convoy headed for Madang, further north on the New Guinea coast, only the heavy bombers could reach the convoy and attack it. Finally, the Japanese might split the convoy, sending some vessels to Lae and others to Madang. If that happened, the medium bombers would concentrate on the Lae component, with the "heavies" attacking Madang-bound vessels.

A weather front moved across New Britain on February 27, with a tropical cyclone shrouding the island and the Bismarck Sea to its north in clouds and rain. The convoy, formally called 8 Transport Fleet, left Rabaul on February 28. *Shirayuki*, flying Rear Admiral Kimura's flag, led the ships out of port and towards Cape Gloucester at seven knots. For the rest of the evening and throughout the next day, the 16 ships steamed slowly along the northern coast of New Britain, hidden by the protective storm front from Allied eyes. All the while, the convoy was under fighter escort.

DETECTION (MARCH 1-2)

The weather finally broke on March 1. At 1500 hrs, a patrolling B-24 spotted 14 ships heading west 40 miles northwest of Ubuili. It reported seeing eight transports and six destroyers or light cruisers – the big IJN destroyers were often confused with light cruisers by aerial observers. But the weather closed in again, and a second B-24 sent to relieve the earlier one failed to find the convoy. So did eight B-17s, despatched on a late afternoon mission to attack the convoy.

Another B-24 found the convoy the next day, March 2. The first sighting occurred at 0815 hrs, with the vessels at the entrance to the Dampier Strait making nine knots. Clouds made it difficult to see all the ships. Again, only 14 of the 16 ships in the convoy were spotted. With the heavy bombers now in range of the convoy, eight B-17s were launched immediately, with another 21 four-engined bombers (four B-17s and 17 B-24s) following soon after. Both waves were to have been accompanied by an escort of P-38 Lightning fighters, but those aircraft, departing from a separate airfield, failed to rendezvous with the first flight of bombers.

The first formation of B-17s reached the convoy at about 1100 hrs, at which point crews recalled seeing 14 ships – one light cruiser, five destroyers, and eight merchant vessels. Dropping 1,000lb demolition bombs from 6,500ft, they claimed to have hit and sunk two transports. This was followed by the second formation of B-17s and B-24s, bombing from 5,000ft, around 30 minutes later. These crews claimed two additional hits and reported leaving four cargo ships burning, sinking, and exploding.

The actual results were less spectacular, but still creditable. Bombs hit and sank the 5,493-ton *Kyokusei Maru*. Hits or near misses damaged both *Nojima* and *Teiyo Maru*, although neither was hurt badly enough to prevent them from keeping up with the convoy. None of the ships “broke in half and sank in two minutes” as reported by Fifth Air Force pilots. Japanese destroyers were able to recover 850 to 950 troops from *Kyokusei Maru* – most of those on board. The only ship sunk on March 2 went down slowly enough to allow evacuation.

The bombers faced both antiaircraft fire and Japanese fighters. The former proved ineffective and the 24 IJNAF A6M2/3 Zero-sen fighters covering the convoy failed to press home their attacks on the four-engined “heavies.” Unsurprisingly, the USAAF aircraft involved suffered no losses.

Shadowed by a B-17, the convoy continued to head west past the Dampier Strait for the larger Vitiaz Strait. This move brought them closer to Lae’s airfields and fighter cover. It also offered more maneuvering room. At 1730hrs *Yukikaze* and *Asagumo* left the convoy, steaming to Lae at flank speed (21 knots). Between them they carried Lt Gen Nakano, his staff, and the troops rescued from *Kyokusei Maru*, intending to unload them at Lae that night.

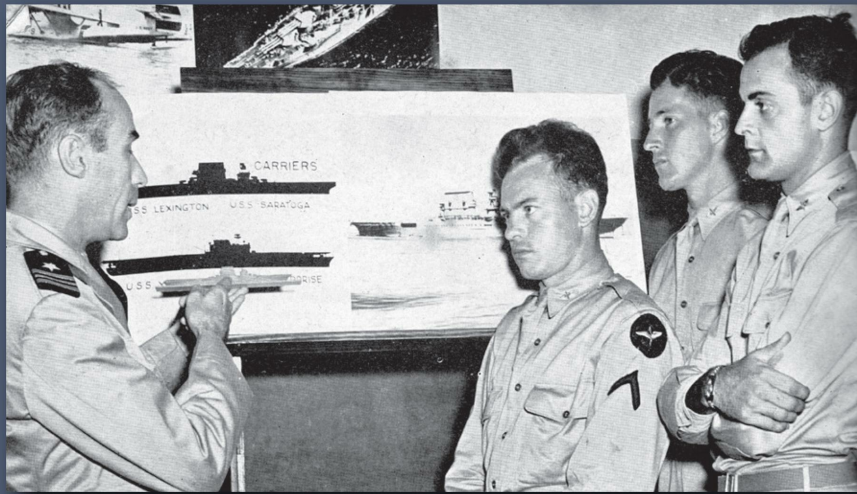
USAAF aircraft managed one more strike against the convoy on March 2,

11 B-17s reaching the transports shortly after the destroyers left, perhaps 30 minutes before sunset. The crews involved counted 16 ships, dropped 43 bombs and claimed two hits, with one ship “left sinking.” In reality, they had scored no hits and overestimated the number of enemy ships present by two! As darkness fell, a RAAF PBV Catalina took up shadowing duties. It stalked the convoy the rest of the night, occasionally dropping a bomb to keep the Japanese crews awake.

SHIP IDENTIFICATION

Damage claims against Japanese vessels were often inflated by Allied bomber crews because it was inherently difficult to judge a ship's size at sea when there were no obvious reference points for comparison. Accurately identifying a ship from the air depended on subtle visual cues – the location and arrangement of gun turrets for warships, and the positioning of superstructure for merchant ships. Clouds, smoke, and haze complicated identification by obscuring details or hiding ships from observation, especially at altitudes in excess of 5,000ft.

IJN cruisers and destroyers had similar outlines. Large Japanese destroyers had twin-gun turrets, just like most IJN cruisers built after 1925. Allied destroyers and pre-Fubuki-class Japanese destroyers had single-gun turrets. Unsurprisingly, Allied pilots with a cursory knowledge of IJN warships often identified Special Type and Type A destroyers as light cruisers. Indeed, they superficially resembled British and Australian Arethusa- and Leander-class cruisers. The result was Allied crews frequently misidentified ships, almost always optimistically bumping them up in size. Destroyers became cruisers, while 2,500-ton merchantmen grew into 5,000-ton freighters, and 5,000-ton freighters were transformed into 10,000-ton liners.



USAAF cadets are given instruction in ship recognition by a lieutenant commander from the US Navy. (Author's Collection)

March 2 ended with both sides content. The Allies believed they had sunk nine transports. The Japanese had lost one transport. The next day, they would reach Lae. If the 3rd went the same way as the 2nd had done, the convoy would lose one more ship and land three-quarters of the reinforcements it had brought from Rabaul – well above the projected 50 percent loss rate. Admittedly, the 850 men rescued from *Kyokusei Maru* and rushed to Lae during the night would be without weapons or equipment, but they could be resupplied from local stores and materiel aboard the remaining ships of the convoy.

MAIN BATTLE (MARCH 3)

As March 3 dawned, the convoy, with its seven surviving transports, pressed on towards Lae, accompanied by the remaining six destroyers. They had exited the Bismarck Sea, over which the previous day's action had been fought, and which gave its name to the battle, and had passed through the Vitiaz Strait during the night. They were now in the Solomon Sea, and just 80 nautical miles from their destination. At nine knots, that distance could be covered in nine hours.

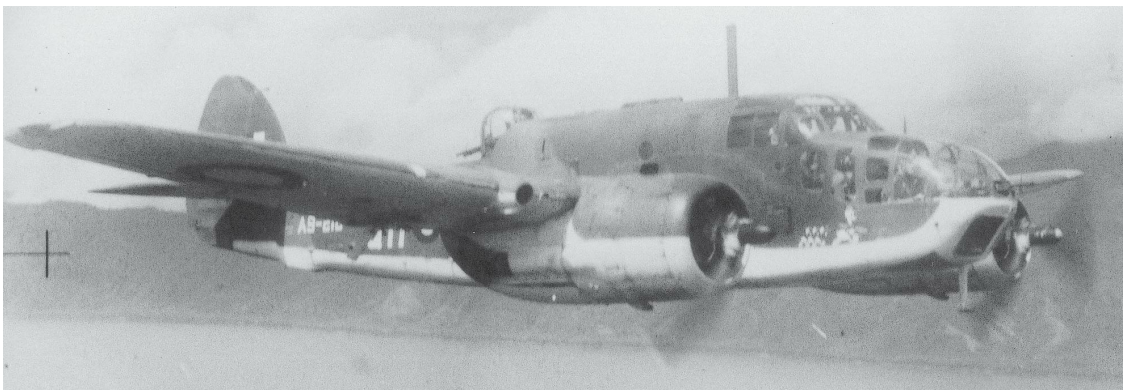
But the fighting on March 3 would prove dramatically different from that of the previous day due to the fact the convoy was now within striking distance of USAAF and RAAF medium bombers. The Allies planned a maximum effort. On this day, the four-engined heavy bombers that attacked previously would be accompanied by B-25s and A-20s from the 3rd and 38th BGs, and RAAF Beaufighters (No. 30 Sqn) and Beauforts (No. 100 Sqn). Each strike would be escorted by 28 P-38 Lightning fighters. The B-17s and those B-25s not converted to strafer configuration would attack at medium altitudes – 5,000–6,000ft. The remaining twin-engined types would come in at 500ft.

The Lightnings would provide top cover, which was needed, for the IJNAF had 40 A6M2/3 Zero-sens escorting the convoy. The Japanese were unaware of the intended low-level attacks planned by the Allies, which meant the IJNAF fighter pilots had been instructed to fly at medium altitude in order to intercept attackers at the heights they had used the previous day. Japanese fighters would, therefore, concentrate their attention on the Allied aircraft most capable of defending against such attacks – the heavily armed B-17s.

They had to fight their way through the P-38s to reach the bombers, which meant the Zero-sens ignored the skip bombing and strafing A-20s, B-25s and Beaufighters.

The Allied aircraft picked up the convoy right after dawn. At 0545 hrs, a B-17 relieved the RAAF Catalina that had been shadowing the vessels throughout the night. Stalking the ships like a hunting dog, the B-17 kept the Fifth Air Force apprised of its exact location, off the Huon Peninsula. By 0900 hrs, *Yukikaze* and *Asagumo* had rejoined the convoy, having offloaded their human cargo during the night and then steamed at flank speed to return to the remaining vessels. Their appearance led to Allied post-battle speculation that one or two destroyers had been sunk the previous day, and that these were two new warships reinforcing the escort.

Allied aircraft began departing the Port Moresby airfield complex at 0800 hrs, flying over the Owen Stanley Range to rendezvous at 6,000ft over Cape Ward Hunt, roughly halfway between Buna and Salamaua, on New Guinea's north coast. Over the Solomon Sea and Huon Gulf, where the battle would take place, there was scattered cumulus up to an altitude of 1,000ft. A solid layer of altostratus lay at 11,000ft, well above the medium-level bombers. Surface haze made low-level visibility poor.



The Allies opened the second day of the Battle of the Bismarck Sea with a torpedo attack by 12 RAAF Beauforts from No. 100 Sqn. All the weapons missed, but the attack led the Japanese to expect more torpedo runs. This particular Beaufort VIII, A9-212, was delivered to No. 100 Sqn in New Guinea in February 1943 and participated in the attack on March 3.
(Andrew Thomas Collection)

At 0930 hrs, five minutes after the first Allied aircraft reached the rendezvous point, No. 100 Sqn's torpedo-carrying Beaufort VII/VIIIs made

the first attack on the convoy. No hits were achieved, as the Japanese were old hands at evading torpedo attacks. Turning into or away from the torpedo tracks, cargo ships, and especially the fast, nimble destroyers, easily slipped between the running weapons. Despite the lack of hits, the Beauforts had successfully conditioned the Japanese to view all mast-top attacks as torpedo runs. When the skip-bombers arrived, IJN vessels would react as they would for a torpedo attack by turning parallel to the approaching aircraft.

Within 30 minutes, Beaufighters and B-17s had joined the battle. Thirteen RAAF heavy fighters from No. 30 Sqn swept in at mast-top height in line astern at 220 knots, each aircraft being armed with four 20mm cannon in their nose and six wing-mounted 0.303-in. machine guns. While the rounds fired by the latter weapons were not as heavy as the 0.50-cal. slugs of the M2, they were capable of clearing any exposed crew from ships' decks. The explosive 20mm shells lacked the penetrating power of a 0.50-cal. round, but did greater damage to unarmored targets. While lacking the punch to sink any ships, the attacks scattered the crew.

Just as the Beaufighters began their sweep, 13 B-17s dropped bombs from medium altitudes. The heavy bombers were followed by 13 unconverted B-25Cs making standard medium level attacks. Neither the Flying Fortresses nor the Mitchells achieved any hits, but they succeeded in forcing the convoy to scatter.

Then it was the turn of the 12 strafing-equipped B-25s of the 90th BS. They made what was likely the most successful attack of the battle, and one of the most successful of the war. Sweeping in at 500ft in pairs, they picked out individual targets to strafe and bomb. By then the convoy was widely dispersed, with destroyers and transports maneuvering independently to evade the attacking medium level bombers. As the strafing B-25s closed on a target, that ship, believing it was under torpedo attack, turned its helm over to minimize exposure to torpedoes. This was exactly what the skip bomber pilots wanted, for it allowed them to rake the deck of the ship with fire from eight 0.50-cal. machine guns.

1Lt Roy Moore, flying a B-25, recorded the result in his after action report:

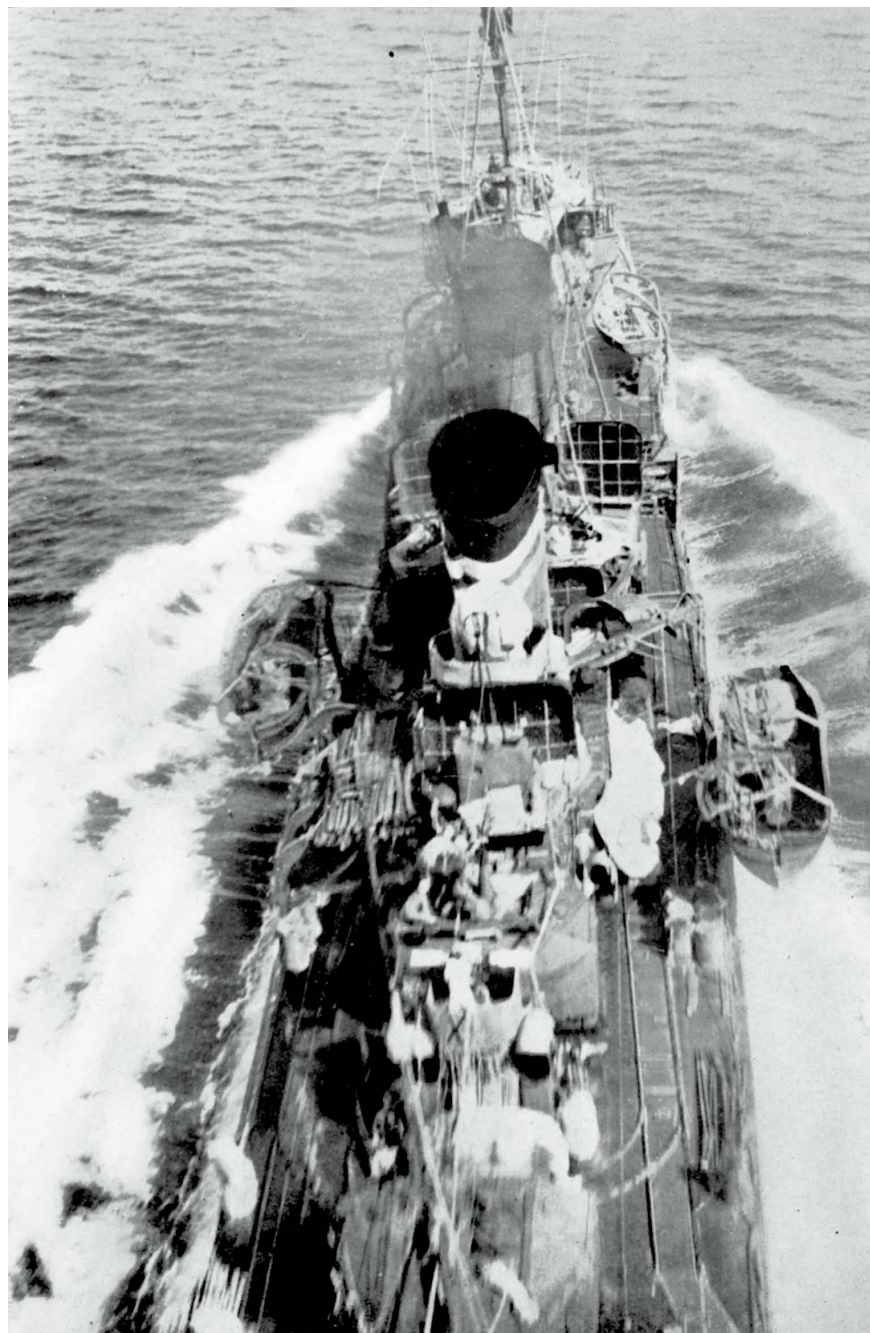
When within strafing range I opened fire with my forward guns. The decks were covered with troops lined up facing the attacking plane with rifles in hand, However, my 0.50-cal. machine guns outranged their small arms and I saw hundreds fall.

Once near the target, the strafers dropped a pair of 500lb bombs. They were equipped with a five-second time delay to allow the bomber to escape the weapon's blast. It also allowed the bomb to penetrate deep into the hull of a ship before exploding, creating devastating damage. If the bombs missed to either side, they exploded in the water beneath the ship, staving in the hull plating of both destroyers and transports.

Each B-25 made two runs on the Japanese vessels, with deadly effect. While concentrating on the transports, the Mitchells also went after the destroyers. First to be hit was the Asashio-class destroyer *Arashio*. After being strafed, it received three direct hits from 500lb bombs, leaving the warship mortally damaged. Its helmsman may have been killed during the strafing attack because *Arashio* slewed out of control after being hit, colliding with the previously damaged *Nojima*. The latter sank, taking its cargo of provisions with it. *Arashio* suffered a similar fate several hours later.

Next to go was the Fubuki-class vessel *Shirayuki*, flagship of Destroyer Squadron 3, with Rear Admiral Kimura on board. Machine gun fire raked the length of the destroyer, killing many of those on deck and wounding Kimura. A bomb struck the destroyer aft, blowing off its stern. The ship remained afloat only long enough for sister-ship *Shikinami* to come alongside and pick up survivors. This included the wounded admiral, who transferred his flag to *Shikinami* and continued to run his side of the battle.

Then it was the turn of Kagero-class destroyer *Tokitsukaze*. Attacked by a pair of B-25s, it was hit several times by bombs, including one that landed in its engine room, leaving the ship dead in the water. *Yukikaze* evacuated Lt Gen Adachi and most of *Tokitsukaze*'s crew once the morning attack was over, only leaving a small damage-control party aboard the crippled destroyer. Their efforts to save the ship were in vain, for *Tokitsukaze* sank later that day.



A B-25 gunner took this photograph during a mast-top attack on the destroyer *Shirayuki*, flagship of Destroyer Squadron 3, during the Battle of the Bismarck Sea. The vessel, with Rear Admiral Kimura on board, was crippled in the first wave of attacks and later sank.
(Author's Collection)

The B-25s also worked over the transports. *Kembu Maru*, with its load of aviation gasoline, exploded during the attack. By 1005 hrs *Aiyo Maru* and *Oigawa Maru* had also been hit and were sinking. Minutes later, *Shinai Maru*, *Taimei Maru* and *Teiyo Maru* each took four bomb hits, although

credit for that damage had to be split between the strafers B-25s, 12 strafers A-20s that followed them in and six standard Mitchells that chose to make low-level skip-bombing attacks. Although the latter only had a single 0.30-cal. machine gun in the nose, the ships' crews were in such a state of disarray by then there was no need to suppress anti aircraft fire.

The results achieved were phenomenal. The 90th BS crews reported 17 direct hits from 37 bombs dropped. The A-20s claimed a further 11 hits, while the remaining B-25s were credited with four. By the end of the morning attacks, three destroyers had been sunk or were left sinking, two transports had also been sunk and five others were crippled.



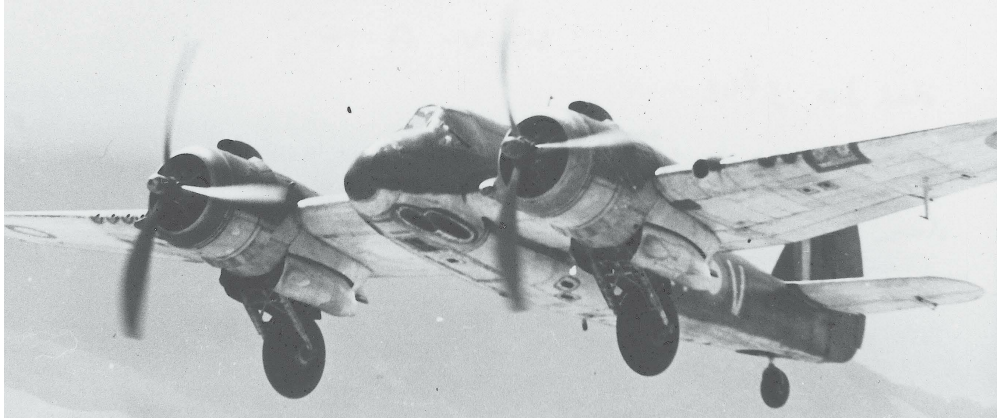
B-25C 41-12969 was used by 90th BS CO Maj Ed Larnier in the attack on the Lae Relief Convoy on the morning of March 3, 1943. He almost certainly hit the destroyer *Shirayuki* with one of two 500lb bombs dropped from this aircraft, the second weapon detonating in the water immediately alongside the warship. The destroyer was crippled in the attack, and sank shortly thereafter. *SPOOK II* crashed after "buzzing" Dobodura airfield on April 30, 1943, killing all eight crew, including Maj Larnier. (NARA)

After the battle, legendary Australian cinematographer Damien Parer (who was later killed in action on Peleliu), filming over the shoulder of No. 30 Sqn Beaufighter pilot Flt Lt Ron “Torchy” Uren as he made three strafing passes on the convoy, told a correspondent, “Those B-25s – they simply stole the show. You’ve no idea what they were like. The poor bloody Japs didn’t have a chance – not even their warships!”

The morning attack ended after the last six Mitchells dropped their bombs. No more than 30 minutes had elapsed between the time the first Beaufighter opened fire and the last B-25 attacked. The aircraft then headed back to Port Moresby.

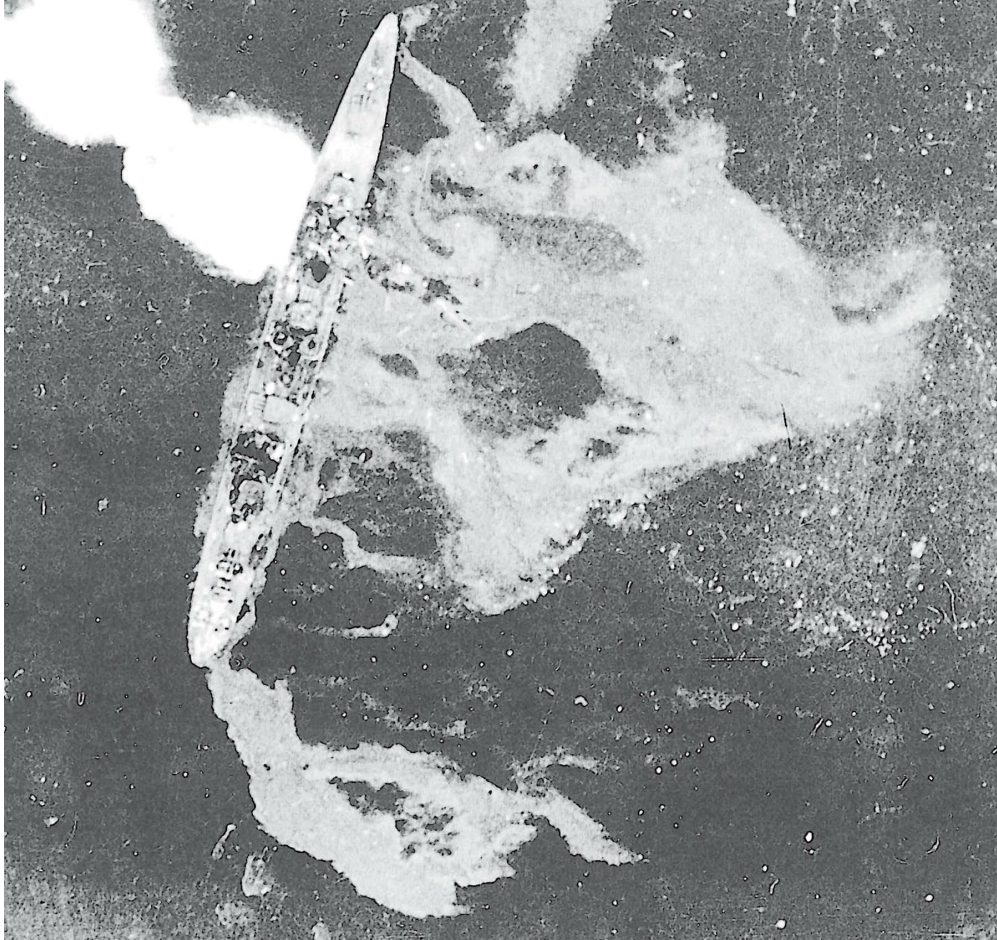
Allied losses were light. Two B-17s had been shot down, with one being forced to ditch and the crew of the second aircraft being machine-gunned by Japanese fighters after they had bailed out of their stricken bomber. Three P-38s also failed to return. No B-25s were lost, although the straffer formation was attacked by Zero-sens while flying back to the New Guinea coast. Turret gunners had shot down one of the fighters by the time P-38s arrived on the scene to drive off the remaining Zero-sens. Allied gunners claimed five enemy fighters destroyed in total, with Lightning pilots being credited with a further 15 victories. The actual number of IJNAF fighters lost was only a fraction of this tally.

As soon as the Allied aircraft withdrew, the remaining destroyers began fishing survivors out of the water. Each vessel pulled hundreds aboard, and by noon 2,700 soldiers and sailors had been saved by *Uranami*, *Shikinami*, *Asagumo*, and *Yukikaze*. Overloaded with men, they hastily retired up the Vitiaz Strait, steaming at more than 20 knots. *Asashio* stayed behind to assist the crippled *Arashio*, which was still afloat. The commander of *Arashio*’s destroyer division, embarked in *Asashio*, wanted to salvage the vessel, perhaps by towing it to safety.



A RAAF Beaufighter IC of No. 30 Sqn takes off from Ward's Strip (also known as 5-Mile Drome to the USAAF) near Port Moresby at the start of a strafing mission in early 1943. At this time, the unit was operating both Mk IC and VIC aircraft, with the principle difference between the two variants being their Bristol Hercules engines – the Mk IC used Hercules XIs and the Mk VIC was fitted with Hercules VIs or XVIIs. Thirteen Beaufighters from No. 30 Sqn participated in the Battle of the Bismarck Sea. (Andrew Thomas Collection)

The day was not over. As soon as the aircraft landed at the Port Moresby complex airfields, they were rearmed and refueled. By 1300 hrs, the bombers were once again heading out to mop up survivors. By then the weather had taken a turn for the worse over the Owen Stanley Range, which meant the Beaufighters and most of the A-20s had to return to base when they failed to find a way over the mountains. Only the B-25s and B-17s, accompanied by five RAAF Bostons, were able to cross.



Fifth Air Force bomber pilots conducted a post-mission assessment after attacking the Japanese convoy, and one of the vessels they photographed was *Arashio*, found leaking oil and drifting after being struck by three 500lb bombs dropped by B-25s. By the end of the morning strikes, all seven surviving transports had been crippled or were sinking, while three of the eight destroyers escorting the convoy were out of action. *Arashio* eventually sank, with the loss of 72 crew. (Author's Collection)

The Flying Fortresses arrived first, attacking at 1512 hrs, with the Mitchells and Bostons close behind. A confused melee followed, with the B-17s and some of the conventional B-25s attacking at medium altitude, dropping bombs on the IJN ships as the skip-bombing Mitchells and Bostons commenced their runs. The B-17s claimed two hits on a large destroyer – probably the stationary *Arashio* or *Tokitsukaze*, both of which were still afloat. It is also possible the heavy bomber crews mistook hits made by B-25s and Bostons for ordnance they had dropped.

Only eight of the 12 strafers from the 90th BS returned for the afternoon mission. They were as effective as they had been that morning, reporting four

hits each on two destroyers. These were most likely *Arashio* and *Asashio*, the latter radioing that it was under air attack at about this time, before going silent. The strafing B-25s reported an equal number of hits on two transports that were still afloat, which meant their bombing accuracy was almost 100 percent. Given that most of these ships were motionless, and the aircrew involved had had hours practicing against a stationary wreck off Port Moresby, perfect accuracy is believable.

Fifteen other B-25s attacked as well from both medium and low altitudes. One of the medium level B-25 pilots, 1Lt W. S. Royalty, said later, “Ours was a bird’s-eye view of a show that was almost unbelievable.” The attackers claimed ten more hits, mostly made by the Mitchells running in from a height of just 100ft – so low their propeller wake ruffled the surface of the water. The five RAAF Bostons concentrated on an unidentified destroyer, hitting it twice and achieving numerous near misses.

The afternoon attacks finished off the remaining ships. Of the transports, only *Oigawa Maru* was still afloat by nightfall, along with the hulks of *Arashio* and *Tokitsukaze*. The rest of 8 Transport Fleet had been sunk. The Battle of the Bismarck Sea was over, and a new era in air combat against warships had begun.

MOP UP (MARCH 4–5)

As night fell, mopping up by both sides continued in earnest. Thousands of Japanese sailors and soldiers were afloat in the Solomon Sea. The four surviving IJN destroyers rendezvoused with the destroyer *Hatsuyuki* in the evening. *Shikinami*, *Asagumo*, and *Yukikaze* unloaded 1,400 soldiers onto *Hatsuyuki* and then refueled, before returning to the Solomon Sea under the cover of darkness to recover more survivors. *Hatsuyuki* and *Uranami* made for Kavieng, in New Ireland, reaching it with the survivors by mid-morning on March 4.

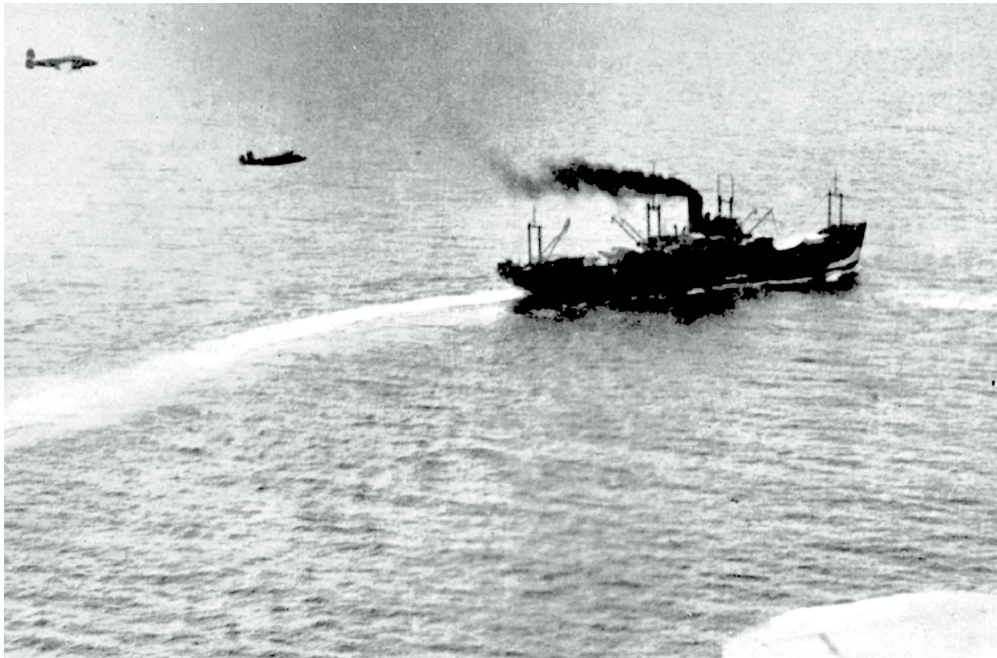


Capt Bob Chatt of the 90th BS/ 3rd BG looks down at two groundcrew from the cockpit of B-25C-1 41-13088 "CHATTER BOX" shortly after the Battle of the Bismarck Sea. Chatt and his RAAF co-pilot, Flg Off Maurice Carse, were credited with sinking the destroyer *Arashio* on March 3, 1943. 41-13088 was lost six weeks later when it hit a tree while on a test flight following repairs to its engines. The aircraft force-landed in a swamp and the crew was rescued by local villagers. (NARA)

Once back among the wrecks, the three destroyers pulled the surviving crews off the still-floating *Arashio* (170 sailors) and *Tokitsukaze* (20 sailors). The IJN submarines I-17 and I-26 also showed up in the area, recovering a further 275 soldiers between March 3–5. This left around 3,200 sailors and soldiers unaccounted for. Some were already dead, killed when their ships

were strafed, bombed, and sunk. Many of the survivors were in ships' boats or landing craft that had floated off when the transports sank. A very lucky few were offered a chance to surrender, and were willing to take it. Most of the rest would die in the following days due to exposure or enemy action.

The US Navy despatched ten PT boats – fast motorboats armed with a pair of torpedoes, light cannon, and machine guns – to the waters where the battle was fought. Two of them, PT-143 and PT-150, saw the flaming hulk of *Oigawa Maru* that night. Each fired a torpedo at it and both hit the ship, which sunk. The next day (March 5), the same PT boats found an IJN submarine rescuing Japanese survivors from a landing craft. They attacked, and although the submarine escaped after they had forced it to submerge, the landing craft was sunk.



After driving off the convoy's destroyer escort on March 3, the 90th BS's B-25s picked off the vulnerable transports at their leisure. The Mitchells usually targeted such vessels in pairs, with one aircraft bombing the target while the other provided additional suppressive machine gun fire during the attack run. (Author's Collection)

Other PT boats attacked and sank rafts, boats, or landing craft they found during the early hours of the 5th. After dawn broke, they were joined by Fifth Air Force and RAAF aircraft. Allied fighters strafed any survivors they spotted. Over the next two days, PT boats and Allied aircraft scoured the

Solomon Sea, sinking any Japanese craft they found and killing any floating IJN sailors and IJA soldiers they spotted. With the enemy refusing to surrender, the only other choice open to Allied pilots was to allow them to reach New Guinea and reinforce the garrison there. This could not be allowed.



Veteran B-25C 41-12443 was only the tenth C-model Mitchell constructed by NAA. Initially bought by the Netherlands East Indies Air Force, the aircraft was requisitioned by the USAAF following its arrival in Australia and issued to the 3rd BG. The Mitchell participated in the long-range "Royce Mission" that saw ten B-25Cs and three B-17Es attack targets in the Philippines in April 1942. One of the first Mitchells to be converted into a strafer, 41-12443 was assigned to the 90th BS and participated in the Battle of the Bismarck Sea. (Michael J. Claringbould Collection)

On March 4, the wrecks of *Arashio* and *Tokitsukaze* were sunk. A B-17 dropped its load of 500lb bombs at medium altitude on the stationary *Arashio*. One bomb went down the stack, blowing out the destroyer's keel and sending it the bottom of the Solomon Sea. Later that afternoon, B-25s used *Tokitsukaze* to practice mast-top bombing, the vessel being despatched with several hits.

A small number of Japanese sailors and soldiers managed to make it to shore, a few hundred reaching New Guinea and the rest washing up on other islands, some as far away as Guadalcanal – the 18 who reached the latter island were allowed to surrender. They were the lucky ones, for most of the

servicemen who came ashore in New Guinea were hunted down and killed by indigenous Papuan natives.

AFTERWARD

Having seen its effectiveness, the Fifth Air Force embraced the strike bomber concept. By April, another 18 B-25s had been converted to strafers, for a total of 30, and more glass-nose Mitchells were modified during the course of the year. Strafers proved to be so successful that NAA converted 126 C-models into B-25Gs by replacing the bombardier's position with multiple 0.50-cal. machine guns and a single 75mm cannon in the nose while the aircraft were either under construction or immediately after completion. They were the first of 400 G-models delivered to the USAAF between May and August 1943.

While factory-built B-25Gs had only two forward-firing 0.50-cal. machine guns, Maj Gunn and his staff set about beefing that up after the Fifth Air Force had taken delivery of them. The Townsville Field Modification Center in Queensland, Australia, added two more weapons of this caliber in the nose and four in blister packs on the fuselage. The follow-on to the G-model, the B-25H, had a 75mm cannon and eight-forward-firing machine guns when they left the factory. NAA delivered 1,000 examples in 1943–44.

Both converted and factory-built strike B-25s were used during the campaign to reduce Rabaul, attacking both shipping and land targets. With the latter, strafing Mitchells replaced time-delayed 500lb bombs with "parafrags," which were better suited to disabling aircraft parked in the open on airfields. This combination proved as devastatingly effective in the neutralizing of enemy airfields on New Britain as strafing and mast-top bombing had proven to be against Japanese ships during the Battle of the Bismarck Sea.



Maj Robert H. McCutcheon led the 38th BG's 71st BS during the Battle of the Bismarck Sea. He is seen here sat in the cockpit of B-25C 41-12998 "*TUGBOAT ANNIE*" in early 1943, prior to the aircraft being transferred to the 8th BS/ 3rd BG. It was lost to anti-aircraft fire while attacking Japanese ships in Simpson Harbor on November 2, 1943, the bomber crashing into the water after its right engine was hit. All four crew were killed. (NARA)

Destroyers and other convoy escorts remained high on the target priority list for USAAF B-25s during 1943. On July 20, Mitchells from the Thirteenth Air Force sank the Yugumo-class destroyer *Kiyonami* 42 miles north-northwest of Kolombangara, in the Solomon Islands. Eight days later, Fifth Air Force B-25s strafed, bombed, and sank the destroyers *Mikazuki* and *Ariake* off New Britain.

Mitchells also sank more than a dozen smaller warships of between 100 and 1,200 tons displacement in the 12 months following the Battle of the Bismarck Sea. Most were antisubmarine warfare vessels, and their loss hurt

the IJN's ability to protect its merchant shipping from marauding Allied submarines. The smallest, wooden-hulled Japanese submarine chasers and minesweepers were often sunk by gunfire alone. Prior to the appearance of strafing aircraft and the implementation of low-level bombing, these vessels were virtually immune to air attack. Small and nimble enough to evade bombs dropped by aircraft conducting medium-level horizontal bombing, they proved to be fatally vulnerable to mast-top bombing combined with strafing.

Japan attempted to adapt to this new reality. The quantum improvement in Allied air power meant the IJN and IJA could not use troop convoys within range of enemy strike bombers. Further attempts to send reinforcements to New Guinea using convoys of transports were abandoned. Instead, forces in New Guinea received men and materiel via easily concealed barges that skirted the coast from Rabaul to Cape Gloucester, at New Britain's western end, before making a quick crossing of the straits to Lae and Salamaua. The IJN also brought troops in at night by submarine, although it was unwilling to risk the loss of any more valuable destroyers undertaking such missions in the western Bismarck and Solomon Seas.

The IJN also attempted to rectify its destroyers' greatest weakness – limited antiaircraft capability. The older vessels, built before the Fubuki-class, carried dual-purpose 4.7in./45 guns, but these destroyers were less capable and too small for frontline service by World War II. They were used instead for antisubmarine and antiaircraft duties, escorting convoys in rear areas.

Of newer construction, only the Akizuki-class destroyers had a true dual purpose main battery. These ships, carrying eight 100mm 65-cal. guns, were authorized in 1939 and intended to escort carrier groups. They began reaching the IJN from mid-June 1942 – almost too late for their intended primary function. Only 12 of the planned 32 were completed, and even these destroyers entered service with a light secondary battery of just two twin 25mm cannon. Subsequent destroyer and destroyer escort classes returned to the slow-firing 127mm gun in turrets that could only elevate up to an angle of 55 degrees.

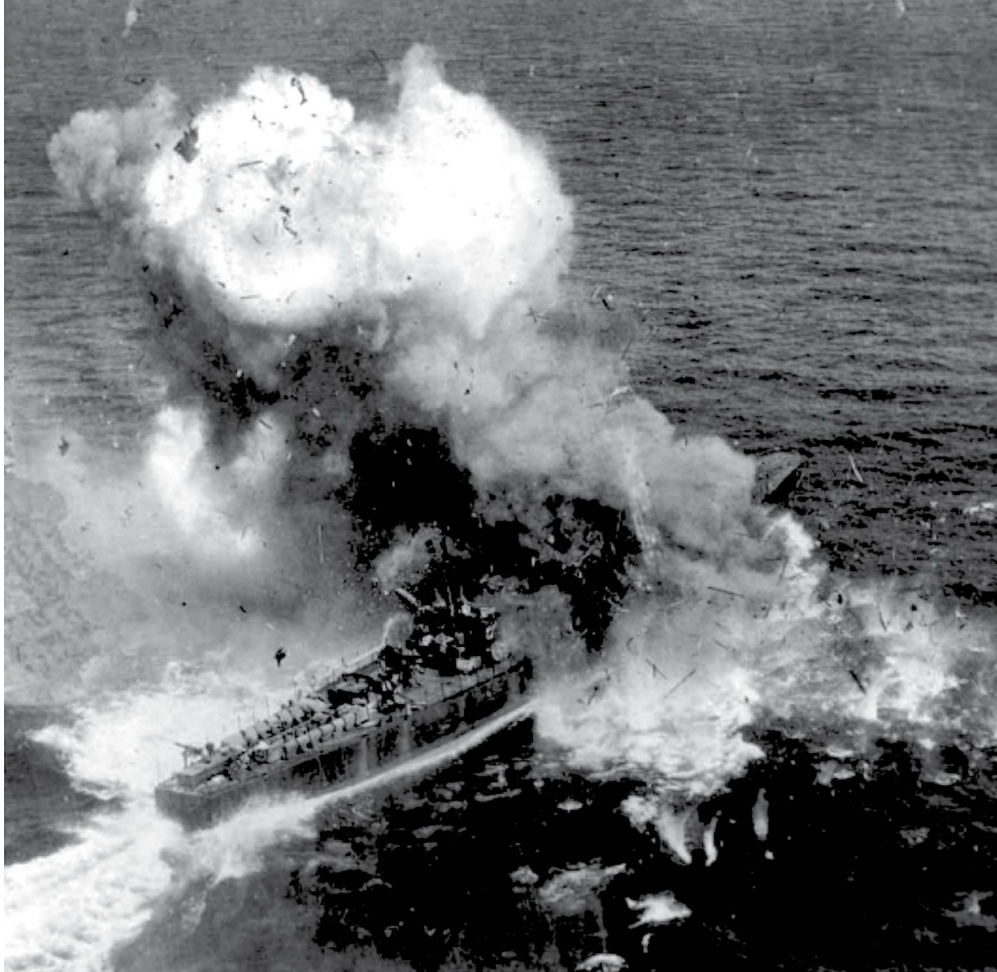


A B-25 from the 345th BG's 500th BS drops a 500lb bomb on the IJN submarine chaser CH-39 during a mast-top attack off Three Island Harbor, near New Hanover Island in the Bismarck Archipelago, on February 15, 1944. CH-39 was targeted while escorting the cargo ship *Sanko Maru*, which was towing a midget submarine. Mitchells from the 500th BS sank both the submarine chaser and the merchantman, and damaged the midget submarine. (Author's Collection)

To compensate for an inadequate heavy antiaircraft battery, IJN destroyers increased their complement of light antiaircraft weapons. At a minimum, twin 25mm guns replaced the single 25mm mounting present on destroyers during the Battle of the Bismarck Sea, with a single 25mm weapon then replacing the 0.50-cal. guns. Additional twin and even triple 25mm gun mounts were added from the middle of 1943 onward.

By war's end, Fubuki-class vessels and later classes of destroyers were frequently equipped with as many as 22 Type 96 25mm cannon and ten Type 97 13mm machine guns. Although this appeared to be a formidable deterrent to attacking Allied aircraft, time and again in 1944–45 strafing B-25s would sweep down on these ships with their eight nose-mounted weapons blazing

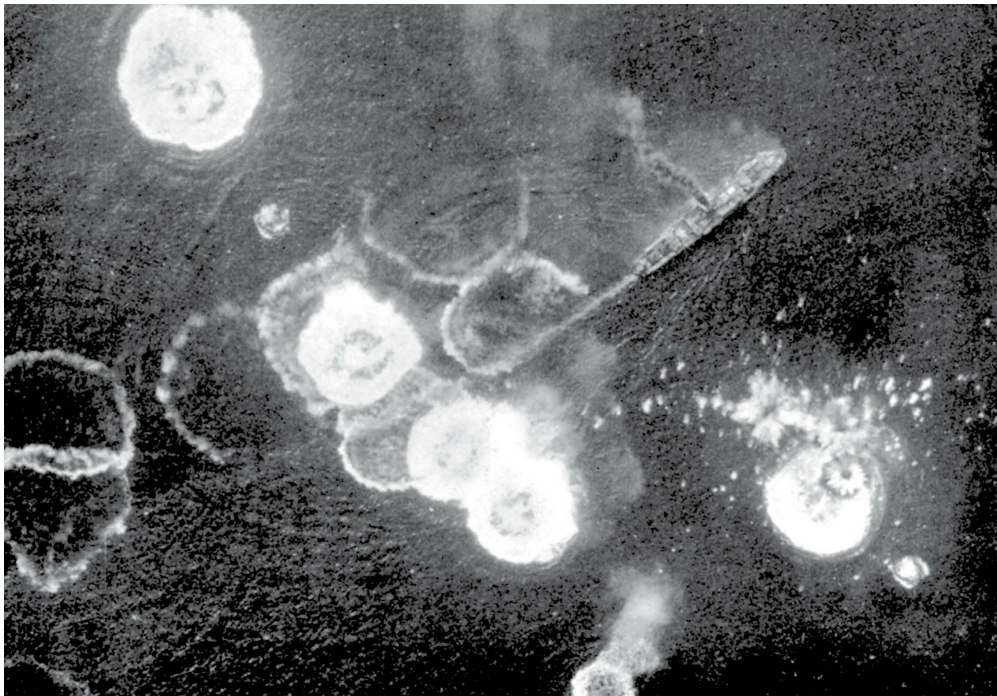
away. This fusillade of 0.50-cal. shells would decimate the light anti-aircraft gun crews, allowing the Mitchells to hit the vessel with 500lb bombs and sink it. Japanese efforts to counter these deadly attacks were too little and too late.



An unidentified IJN sub-chaser suffers a direct hit from a 500lb bomb dropped by a B-25 off the Philippines in late 1944. At least six such vessels were sunk by Mitchells and other Allied aircraft during the fighting to retake the Philippines, the IJN having failed to find an effective way to counter these often deadly attacks. (Author's Collection)

STATISTICS AND ANALYSIS

The tactics introduced at the Battle of the Bismarck Sea changed the Pacific War. Prior to the introduction of skip and mast-top bombing, USAAF medium and light bombers were little more than a nuisance to IJN warships. Using these revised forms of attack transformed Havocs and Mitchells into deadly ship killers.



Even slow-moving transports could evade ordnance dropped from 5,000ft or higher by aircraft flying horizontally at medium level, for there was usually enough time to maneuver out of the way before the bombs arrived. (Author's Collection)

Based on Joint Army–Navy Assessment Committee analysis conducted after the Pacific War had ended, USAAF aircraft unassisted by US Navy or US Marine Corps aircraft sank a total of 70 IJN warships and 240 merchant vessels during World War II. Only five warships and 34 merchant vessels had been sunk prior to the Battle of the Bismarck Sea. Although heavy bombers and fighters sank some of the Japanese ships lost after the Battle of the Bismarck Sea, the vast majority were despatched by strafe-equipped A-20s and B-25s, especially the Mitchell.

Allied forces dropped 253 1,000lb and 261 500lb bombs during the Battle of the Bismarck Sea. All of the 1,000lb bombs and 124 500lb bombs were expended by horizontal bombers. From these, only 30 hits were claimed – an eight percent hit rate. Of the 137 bombs dropped using skip and mast-top bombing, 48 impacted their targets – a 35 percent hit rate.

The actual hit rate of the horizontal bombing was probably lower, for the 30 hits represent claimed rather than actual strikes. On March 2, crews from USAAF bombers (exclusively four-engined B-17s, and B-24s on that date) claimed hits on eight transports, four of which they believed were sunk. One was claimed to have been seen broken in half, two exploded and three were left burning. In reality, three vessels were hit and only *Kyokusei Maru* sank that day. Two others, *Nojima* and *Teiyo Maru*, were damaged, but not badly. It is more likely they experienced near-misses than hits.

Twenty-one bombers had attacked the convoy on March 2, dropping between 100 and 130 500lb and 1,000lb bombs. They succeeded in striking just three ships, which meant their hit rate was closer to three percent rather than eight percent, as stated at the time. Horizontal bombing did, however, achieve a higher hit rate on subsequent days. Several of those ships hit and sunk by horizontal bombing, most notably the destroyer *Tokitsukaze*, were already dead in the water due to previous damage (usually from mast-top bombing). Horizontal bomber crews were trained to hit stationary targets.



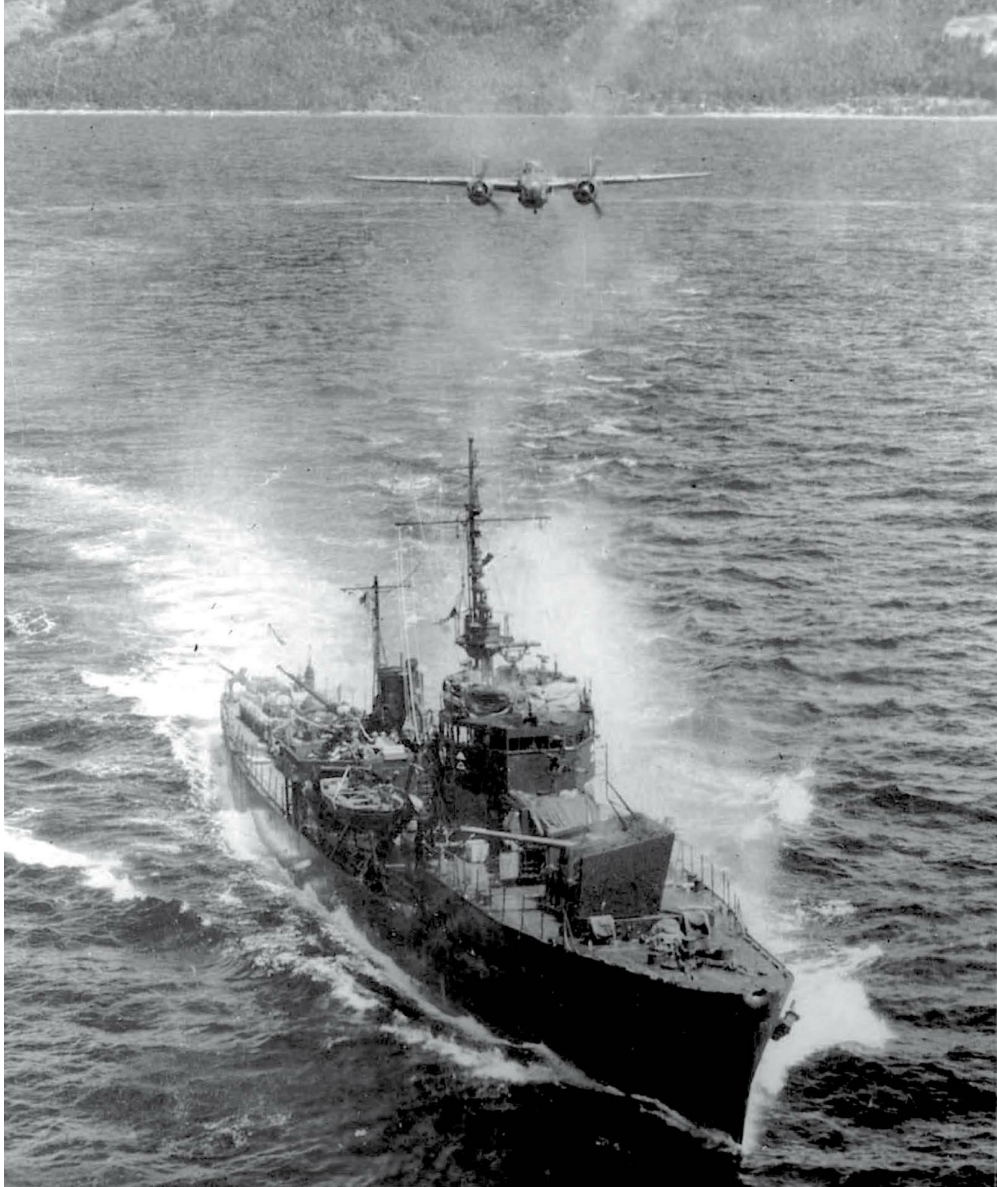
From early 1943, strafers Mitchells and Havocs tasked with attacking land targets in New Guinea had their time-delayed 500lb bombs replaced with "parafrags," which were better suited to disabling aircraft parked in the open on airfields. Here, a Japanese bomber caught on the ground at Alexishafen bursts into flames after being hit by "parafrags" on January 26, 1944. (NARA)

The ships hit by horizontal bombers on March 2 were among the convoy's largest transports, making them the biggest targets and the least maneuverable. No destroyers were hit that day. In fact, the only destroyers hit by horizontal bombing on subsequent days were already dead in the water. Horizontal bombing worked for mopping up cripples, but had the Allies been limited to such attacks during the Battle of the Bismarck Sea, it would have most likely ended with five or six of the transports reaching Lae and no destroyers being sunk.

By contrast, the low-level skip and mast-top attacks on March 3 were devastating. During the morning attack, all seven surviving transports were hit and disabled. More critically, three of the eight destroyers were also crippled. Eighteen B-25s and 12 A-20s had reduced ten ships to stationary wrecks in just 15 minutes.

The RAAF Beaufighters also made a valuable contribution to the slaughter by suppressing the antiaircraft fire of the ships immediately before the B-25s attacked. As previously noted, the Mitchells did the real damage with their follow-up strike. The 12 strafing B-25s and 12 strafing A-20s managed a phenomenal 46 percent hit rate with their bombs. By contrast, six conventional B-25s that used mast-top tactics achieved only a 17 percent hit rate. Nevertheless, this was still twice to three times the hit rate achieved by the heavy bombers in their horizontal attacks.

The success enjoyed by the Mitchells and Havocs was not exclusively due to their low-level attack runs. Twelve torpedo-armed Beauforts from the RAAF opened the March 3 attack on the convoy. They achieved no hits and inflicted no damage on the Japanese ships. Glide-bombing, another means of making low-level attacks with medium and light bombers, also produced only mediocre results.



A 38th BG B-25 attacks IJN Type C escort ship No. 11 in Ormoc Bay, in the Philippines, on November 10, 1944. Badly damaged, the vessel was later scuttled. For all their surface combat deadliness, Japanese warships were remarkably vulnerable to air attack. (Author's Collection)

The nature of skip and mast-top bombing yielded its high hit percentages. Both techniques saw the release of ordnance almost directly over the target. The bomber was so low and so close it was hard to miss, the weapon traveling so quickly between release and contact even fast-moving and highly maneuverable destroyers lacked time to evade.

Ordnance dropped using glide-bombing might take ten seconds to reach a target, and a bomb released horizontally from 5,000ft took 18 seconds to

drop. While a slow-moving, cumbersome transport vessel might find it difficult to maneuver out of the bomb's path, an agile destroyer usually could.

Aerial torpedoes traveled only a little faster than a destroyer and had to be dropped at least 800 yards away to provide time for the weapon to arm itself. That usually meant a running time of more than a minute, giving a quick, nimble destroyer the opportunity to easily evade a torpedo. Indeed, even a slow transport could often accomplish such an evasive maneuver in this time.

Until the advent of skip and mast-top bombing, the chances of an aircraft hitting a freely maneuvering ship in open water were low. The Battle of the Bismarck Sea clearly demonstrated how much skip and mast-top bombing changed the equation.

Not only did these new attack tactics increase the chances of an aircraft getting a hit, they also improved its chances of survival. Horizontal bombing, glide-bombing, and torpedo-bombing all required an aircraft to fly straight at the target for long periods. Horizontal and glide-bombing required holding a straight course for up to a minute, while torpedo-bombing meant flying straight and level for 20–30 seconds – torpedo-bombers also needed to slow down to the torpedo's maximum drop speed. This gave ships' antiaircraft crews time to find, fix, and hit the approaching target aircraft. By contrast, skip and mast-top bombing required only two to three seconds of straight and level flight. The pilot could weave during most of his approach, allowing him to evade fire.

Such action was only necessary if you were indeed being engaged by antiaircraft batteries – dedicated strafers aircraft effectively suppressed such fire. The 0.50-cal. machine guns installed in both the B-25 and A-20 effectively outranged the light antiaircraft guns carried aboard Japanese destroyers. In an effort to further enhance the strafers' effectiveness, the 90th BS practiced attacking ships in pairs. One aircraft would strafe the target ship while the other bombed it. Then strafe and bomber would switch roles on the next pass.

The results of the Battle of the Bismarck Sea also demonstrated the importance of training. Crews from the 89th and 90th BSs had routinely practiced low-level tactics since January 1943. Conversely, the crews of the conventionally equipped B-25s attempting mast-top bombing had not. While the untrained crews achieved hits at rates twice to three times what they

would have managed using horizontal bombing, they had half the accuracy of aircraft whose crews had been trained in those tactics.

Training also revealed that skip bombing was significantly more difficult to master than mast-top bombing. Nevertheless, the former was more effective than the latter because a skip bombing near-miss yielded an underwater blast close enough to damage the ship's hull. With mast-top bombing, a near-miss (due to the weapon's five-second fuze to allow time for the aircraft to escape the blast radius) meant ordnance missing its target typically sank deep enough to prevent it from seriously damaging the hull when the bomb exploded. However, with mast-top bombing being easier to learn, most pilots used this attack method from the Battle of the Bismarck Sea through to war's end.



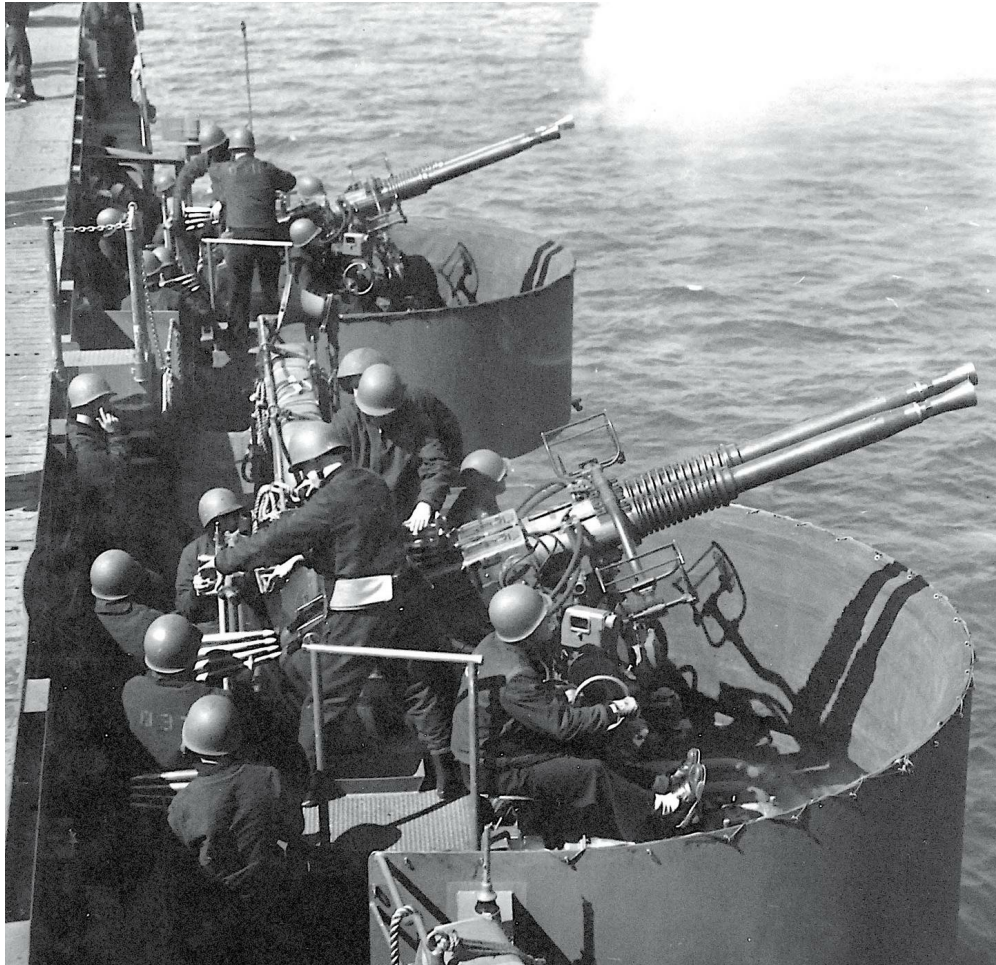
Low-level attacks yielded high accuracy. Once a ship's anti-aircraft fire had been suppressed, a B-25 pilot could concentrate on accurate bombing. In this sequence, the 499th BS/345th BG Mitchell flown by 1Lt Louie A. Mikell has hit the Type D coastal defense vessel No. 134 with a 500lb bomb during a skip bombing attack off the Chinese port of Amoy (now Xiamen) on April 6, 1945. The time-delayed bomb explodes amidships (center). Leaks caused by the explosion fill the vessel with water and it rolls over and sinks (bottom). Sister-ship No. 1 and the Kagero-class destroyer *Amatsukaze* were also sunk in the same action, which involved a total of 24 B-25s. (Author's Collection)

Skip and mast-top bombing tactics proved almost impossible for Japanese ships to counter. They could not outmaneuver mast-top tactics, for the bombs dropped arrived before the helm responded. Furthermore, the 127mm main guns mounted by most modern IJN destroyers were largely ineffective

against aircraft. Their slow train rate became unimportant during mast-top attacks, for aircraft came directly towards the ship, thus minimizing the need for tracking.

The guns' slow rate-of-fire was more of a problem, however, as it meant individual weapons could only get off one or possibly two rounds against an aircraft making an attack. The distance of an incoming aircraft changed too rapidly to fuze a shell so that it exploded when the bomber was in the blast zone. A direct hit was required to knock down an incoming aircraft.

Nor was simply increasing the number of light antiaircraft guns carried an effective counter. The 0.50-cal. Browning machine guns effectively outranged the Japanese 25mm weapons (their best light antiaircraft gun). This typically meant the ships' antiaircraft batteries were subject to withering fire before they could even get a round off. A larger magazine would have allowed crews to engage at a greater distance, while adding gun shields would have offered crews more protection and improved their chances of surviving until the strafers came into range of their weapons. Yet the IJN did neither. They loaded their destroyers with as many 25mm guns as they could carry and hoped for the best.



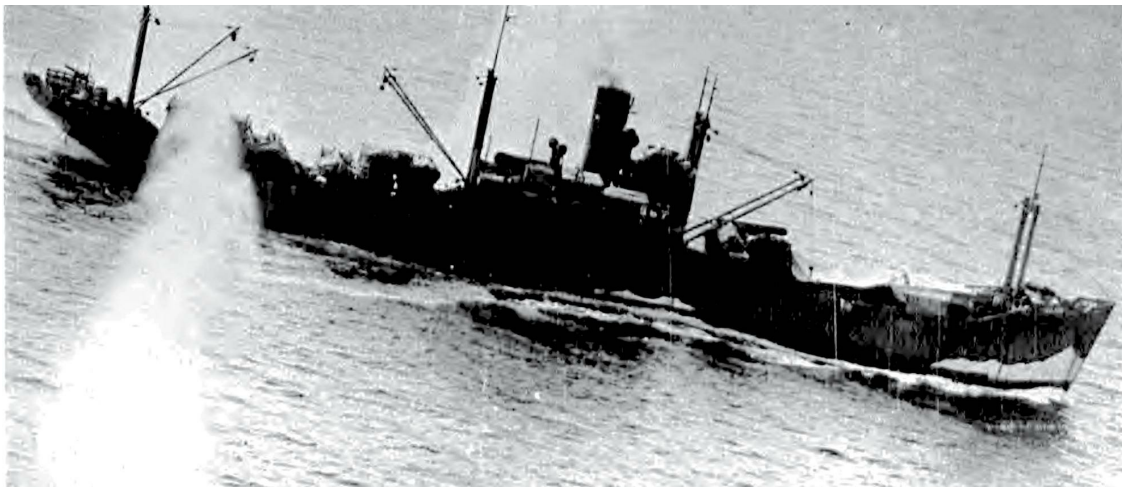
Installing heavier anti-aircraft guns, such as the Bofors 40mm cannon (which, as seen here, saw widespread service with the US Navy), could have countered skip and mast-top bombing. The Japanese captured several examples when Singapore fell in February 1942, but their attempts to put a copy into production failed. (Naval History and Heritage Command)

The most effective response to skip and mast-top bombing attacks would have been the installation of heavier caliber light anti-aircraft weapons on small warships – something similar to the German 37mm FlaK M42 or Bofors 40mm gun. Indeed, the IJN could have sourced prototypes of the M42 from their German allies. The IJA captured 80 Bofors guns when Singapore fell in February 1942, and it used them to develop a prototype Japanese version of the weapon, considered to be the best automatic cannon of World War II. US Navy Bofors guns shot down more Japanese aircraft than any other American anti-aircraft weapon. But Japan lacked the resources and industrial capacity to expeditiously initiate production of the Bofors-inspired cannon, or manufacture them in sufficient quantities once it did.

Adding more 25mm guns to their destroyers and escort vessels did not fix the limitations of the Type 96 weapon. It was the only solution the IJN felt it had available, however. When developing what it felt were the ultimate small surface warships in the form of the Special Type and Type A destroyers during the interwar period, the IJN could never have imagined aircraft would gain the destructive capabilities they had by early 1943. Japanese destroyer crews would pay the price for that short-sightedness for the rest of the war.

AFTERMATH

A new weapon combined with a new tactic can transform the battlefield. It often has through history. Yet few transformations were as decisive or swift as the result when the Fifth Air Force married a strafer version of the B-25 to low-level skip and mast-top bombing.



An IJA transport is hit during a low-level attack on March 3, 1943, during the Battle of the Bismarck Sea. It was one of eight merchantmen sunk during this one-sided clash off New Guinea. (Author's Collection)

The Battle of the Bismarck Sea changed the behavior of the IJN for the rest of the war in the Pacific. Before March 4, 1943, Japan risked losing transport vessels to aerial attack in order to reinforce advanced garrisons, both in the Solomon Islands and New Guinea. It never attempted to do so after that date, with transports being routed to ports beyond the reach of Allied aircraft. If this was impossible, supplies and reinforcements were delivered on board destroyers making high-speed runs, preferably limiting the most dangerous parts of the passage to the hours of darkness.

More than that, the arrival of B-25s and A-20s over a new patch of ocean led to the Japanese abandoning that area. One reason why relatively few IJN destroyers and escorts were sunk by B-25s was that these warships avoided areas that came within range of such aircraft.

The Battle of the Bismarck Sea also transformed the reputation of the Mitchell. Prior to this engagement, it was a run-of-the-mill medium bomber with an unimpressive overall record, despite B-25s having targeted Tokyo during the epic Doolittle Raid of April 1942. The advent of the strafer version, combined with innovative low-level tactics (including others devised specifically for airfield attack and ground support of friendly troops), turned the B-25 into the most effective American-built twin-engined medium bomber of the war. The strafer conversions and low-level tactics were developed in the field, with much of this pioneering work being done by the Fifth Air Force despite it operating at the end of a very long supply line and having to endure a low priority for resources. It was a triumph of imagination and innovation.

By war's end, few IJN destroyers remained. Most had been sunk by submarines, carrier aircraft and during surface combat. Allied radar stripped the advantage darkness had initially given the Japanese in night actions and gave it to Allied forces.

One destroyer that survived undamaged through to VJ Day was Battle of the Bismarck Sea veteran *Yukikaze*. A participant in more than ten major battles and in excess of 100 escort missions, it was dubbed the unsinkable ship and the “miracle ship” by IJN personnel. One of only three pre-war destroyers (of 82 that had been built) to survive, *Yukikaze* was transferred to the Republic of China as a war reparation. Christened *Tan Yang*, it initially served as an unarmed training vessel and flagship of the Republic of China Navy. In 1956 the destroyer was rearmed with US Navy weapons, including three 5in./38 dual-purpose guns, 3in./50 weapons and 40mm Bofors guns. It was an antiaircraft battery that could have served *Yukikaze* well during World War II. *Tan Yang* was eventually scrapped in 1970.



Yukikaze was the only IJN vessel involved in the Battle of the Bismarck Sea to survive World War II. Photographed following its disarmament in 1947, the destroyer subsequently served with the Republic of China Navy as *Tan Yang* until it was scrapped in 1970. (Naval History and Heritage Command)

By then the B-25 had long disappeared from frontline service. When the USAAF became the independent US Air Force in 1947, only a few hundred Mitchells remained in the inventory, mostly as advanced trainers. The aircraft soldiered on a decade or so longer, mostly with the Royal Canadian Air Force and in South America. Most examples had been retired by the early 1960s, although the last Mitchells to see combat participated in the Nigerian Civil War of 1967 when the secessionist state of Biafra acquired two from a Florida-based operator. These had both been lost by early 1968. Today, the B-25 survives only in museums and as a warbird, flying with collections such as the Texas-based Commemorative Air Force.

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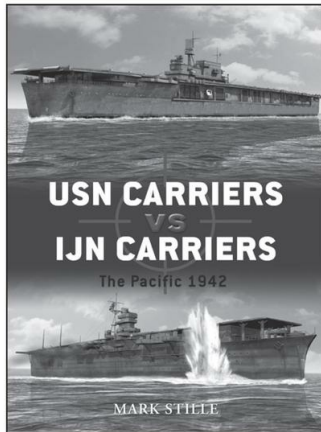
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Mark Lardas, educated as a naval architect, worked for more than 30 years as an engineer, space navigator, and technical writer in the space, aviation, and energy industries. He has an abiding interest in aerospace, maritime, naval and military history, with an emphasis on ship construction and engineering from the 9th to the 21st centuries. He is the author of more than 24 published books on these subjects.

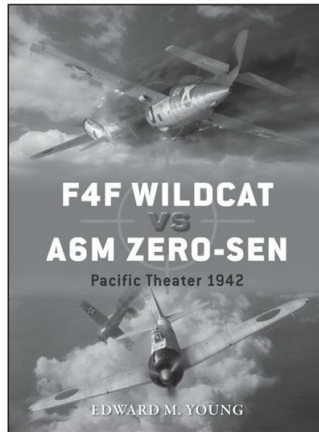
ILLUSTRATOR

Jim Laurier is a native of New England, growing up in New Hampshire and Massachusetts. He has been drawing since he could hold a pencil and throughout his life he has worked in many mediums creating artwork on a variety of subjects. He has worked on the Osprey Aviation list since 2000 and in that time he has produced some of the finest artwork seen in these volumes.

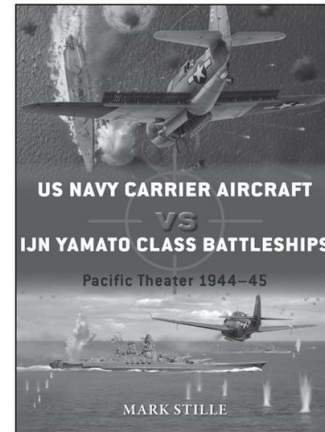
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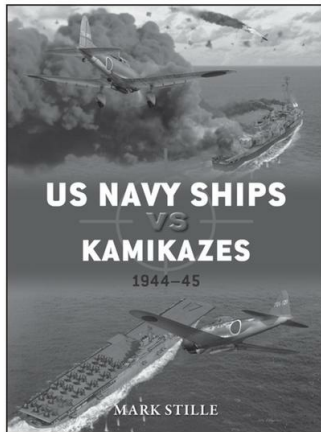
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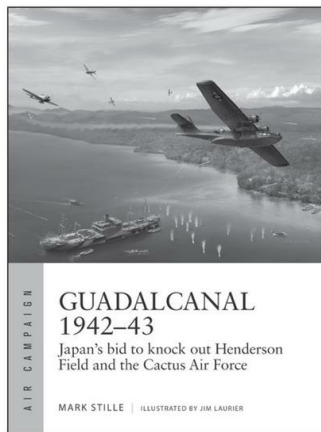


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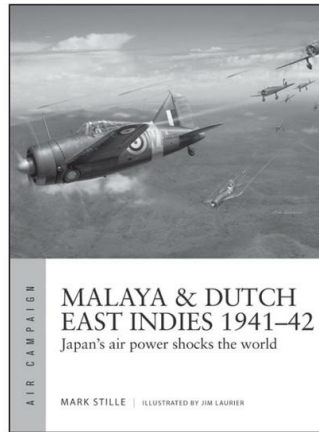


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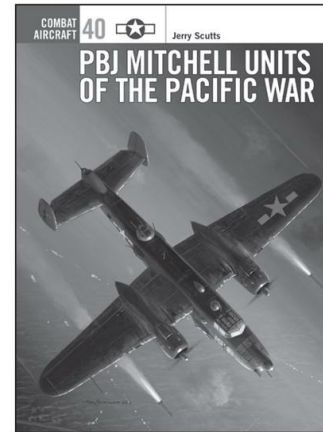
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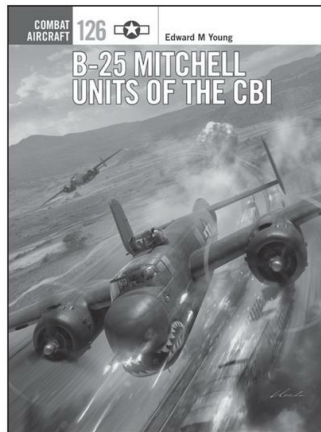
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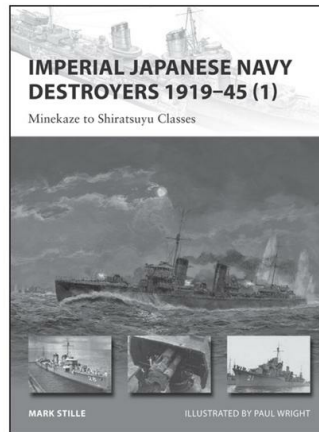
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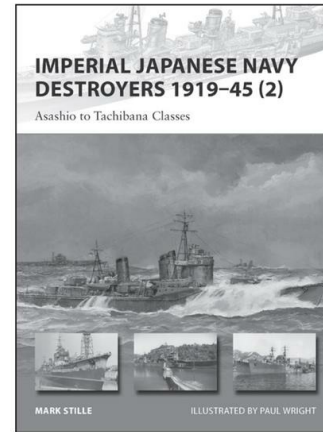
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Kemp House, Chawley Park, Cumnor Hill, Oxford, OX2 9PH, UK

29 Earlsfort Terrace, Dublin 2, Ireland

1385 Broadway, 5th Floor, New York, NY 10018, USA

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OSPREY is a trademark of Osprey Publishing Ltd

First published in Great Britain in 2021

This electronic edition published in 2021 by Bloomsbury Publishing Plc.

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A catalog record for this book is available from the British Library.

PB ISBN: 9781472845177

eBook ISBN: 9781472845184

ePDF ISBN: 9781472845207

XML ISBN: 9781472845191

Edited by Tony Holmes

All artwork by Jim Laurier

Maps and formation diagrams by [**www.bounford.com**](http://www.bounford.com)

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B-25 Mitchells attacking *Shirayuki* cover artwork

At 1030 hrs on March 3, 1943 Rear Admiral Masatomi Kimura (commander of both Destroyer Squadron 3 and the Lae Relief Convoy) was aboard his flagship, the Fubuki-class destroyer *Shirayuki*, when 90th BS Mitchells attacked the convoy he was leading. These were modified strafers aircraft, armed with eight forward firing 0.50-cal. machine guns. One of the bombers, B-25C-1 41-12969 *SPOOK II*, was flown by Maj Edward L. Larner, CO of the 90th BS. On the squadron's initial pass, Larner picked out a destroyer as his target. Based on after-action reports from both sides, his target was most probably *Shirayuki*. Fearing the low-flying aircraft were launching torpedoes, *Shirayuki*'s captain, Cdr Rokuro Sugawara, turned his destroyer away from the onrushing aircraft to parallel the tracks of any torpedoes dropped.

As Larner approached at a height of 500ft, he wove back and forth, crossing the ship's stern to make his aircraft a more difficult target. When 1,500 yards behind the target he straightened out and dived towards it. At 1,200 yards he began firing his nose guns continuously. Using his rudders, Larner yawed the Mitchell left and right to spray the width of the ship with bullets. The 0.50-cal. machine guns were powerful enough to punch rounds through the metal of the turrets shielding the main guns, and they could cut through the metal bulkheads of the superstructure too. Rear Admiral Kimura was probably wounded during this attack.

Accompanied by a wingman who also provided covering fire, Larner descended to an altitude of just 100ft above the water. He aimed his two 500lb bombs so that they landed directly on the ship, rather than skipping them on the water behind the vessel. One of the bombs he dropped hit amidships, burrowing deep into the machinery spaces before the five-second delay fuze detonated the weapon. The second was a near miss alongside, which rolled *Shirayuki* on its beam ends. The attack crippled the destroyer, killing or wounding most of its crew (including Rear Admiral Kimura).

***Shirayuki* under mast-top attack cover artwork**

Two B-25Cs, modified as strafers by replacing the bombardier with four 0.50-cal. machine guns and adding another four forward-firing 0.50-cal. weapons, conduct a mast-top attack on the Fubuki-class destroyer *Shirayuki*. The lead Mitchell, *Spook II* (only the shadow of which is visible in this artwork), flown by Maj Edward L. Larner, would drop two bombs on the destroyer while the wing aircraft provided covering fire.

The B-25s began strafing their target from 1,200 yards, and during the ten seconds when the bombers were in range each Mitchell fired nearly 1,000 rounds of 0.50-cal. ammunition into *Shirayuki*. Each round, weighing 1.5 oz, was capable of penetrating the deck plating and steel housings of the destroyer's main turrets. They would also shred any crewman on *Shirayuki*'s decks, including those manning the anti-aircraft guns. Here, the crew of the portside Type 96 Model 1 25mm 60-cal. cannon mounted ahead of the superstructure target the attacking bombers. One of two such weapons on either side of the ship, their range of fire aft against aircraft approaching *Shirayuki* from the stern was severely restricted by the vessel's superstructure.

Title Page

This B-25D strafers conversion was assigned to the 38th BG's 405th BS "Green Dragons" at Durand Field, which was part of the Port Moresby airfield complex, in early 1943. The majority of the unit's strafers-configured Mitchells were adorned with green dragon artwork inspired by the 405th's insignia. (Michael J. Claringbould Collection)